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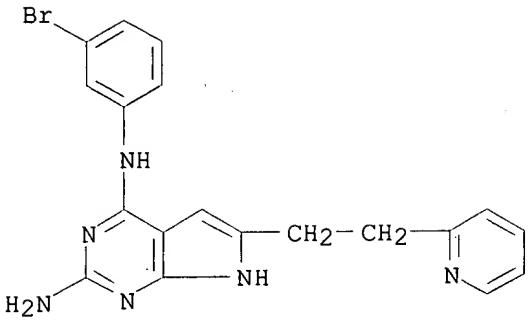
L6 ANSWER 1 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2003:319651 HCAPLUS
DOCUMENT NUMBER: 138:314633
TITLE: Multiple acting anti-angiogenic and cytotoxic pyrimidine compounds, their preparation, and methods for therapeutic use
INVENTOR(S): Gangjee, Aleem
PATENT ASSIGNEE(S): Duquesne University of the Holy Ghost, USA
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003032911	A2	20030424	WO 2002-US32963	20021016

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2001-982351 A 20011018
OTHER SOURCE(S): MARPAT 138:314633
AB The invention discloses pyrimidine compds. (e.g. furopyrimidines and analogs thereof), and pharmaceutically acceptable salts, solvates and prodrugs thereof, useful in therapeutically and/or prophylactically treating patients with cancer by inhibiting receptor tyrosine kinases and/or dihydrofolate reductase and/or thymidylate synthase. The compds. may also be used as anti-infective agents. The compds., and methods of using these compds., are disclosed.
IT **514225-09-3P 514225-10-6P 514225-11-7P 514225-12-8P 514225-13-9P 514225-14-0P**
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(multiple acting anti-angiogenic and cytotoxic pyrimidine compds., prepn., and therapeutic use)
RN 514225-09-3 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[2-(2-pyridinyl)ethyl]- (9CI) (CA INDEX NAME)



RN 514225-10-6 HCAPLUS
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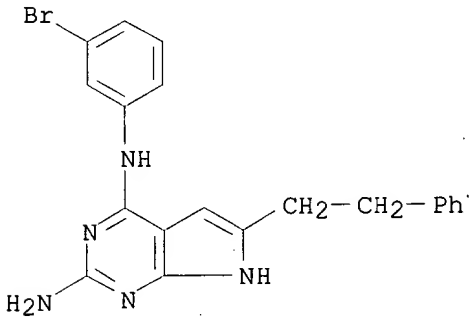

RN 514225-11-7 HCAPLUS
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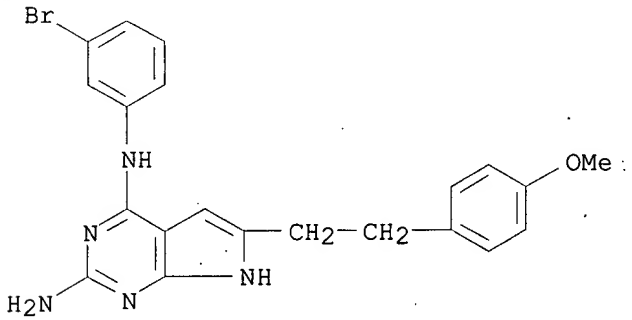

RN 514225-12-8 HCAPLUS
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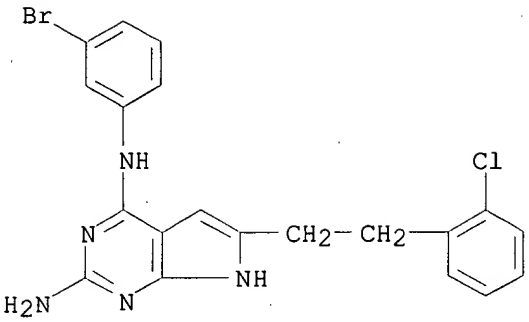

RN 514225-13-9 HCAPLUS
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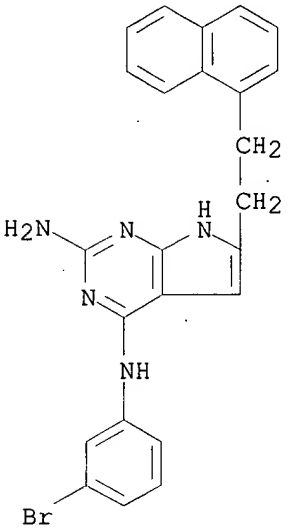

RN 514225-14-0 HCAPLUS
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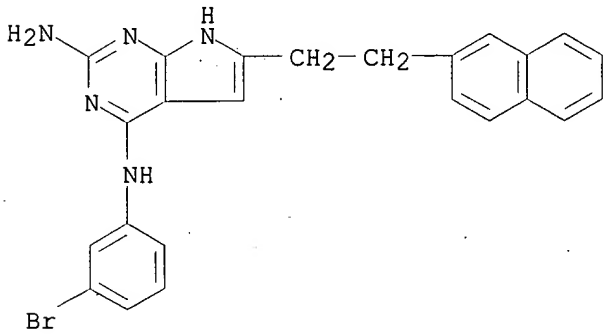
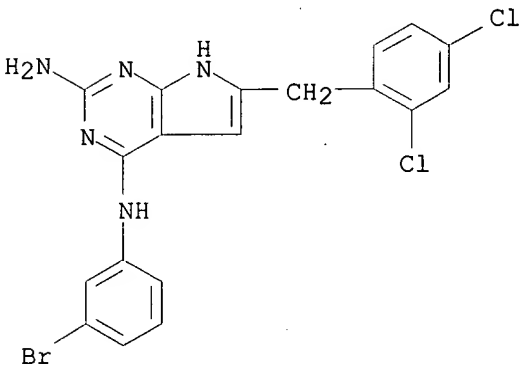


IT **514225-17-3 514225-18-4 514225-19-5**

514225-20-8 514225-21-9 514225-22-0
514225-23-1 514225-24-2 514225-25-3
514225-26-4 514225-27-5
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(multiple acting anti-angiogenic and cytotoxic pyrimidine compds., prepn., and therapeutic use)

RN 514225-17-3 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[(2,4-dichlorophenyl)methyl]- (9CI) (CA INDEX NAME)



RN 514225-18-4 HCAPLUS
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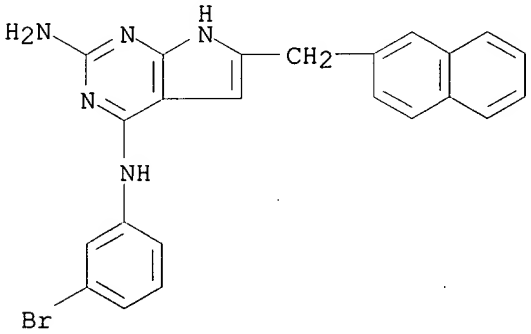

RN 514225-19-5 HCAPLUS
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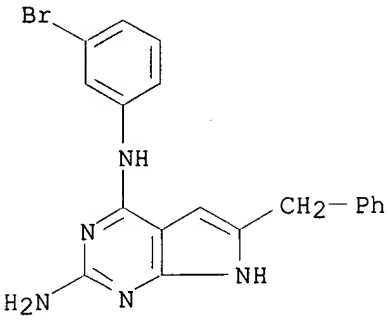
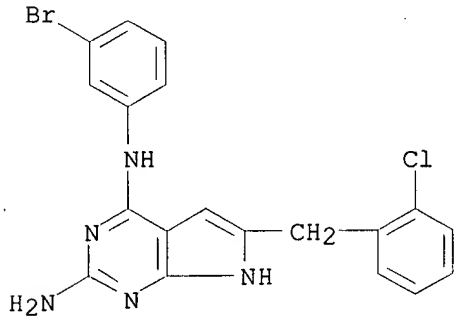
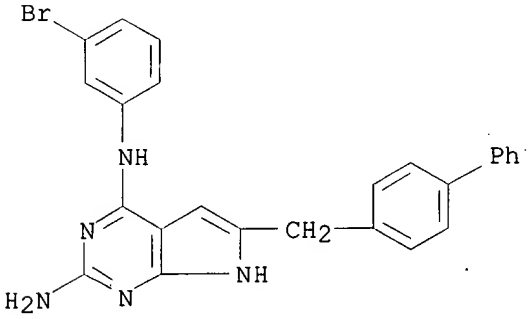


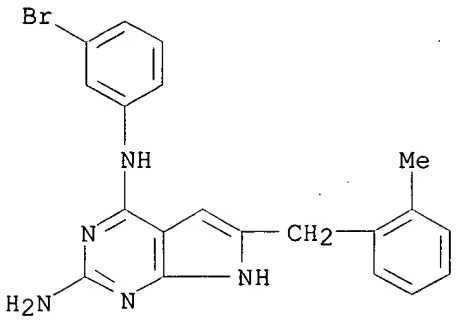
RN 514225-20-8 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[(2-chlorophenyl)methyl]- (9CI) (CA INDEX NAME)



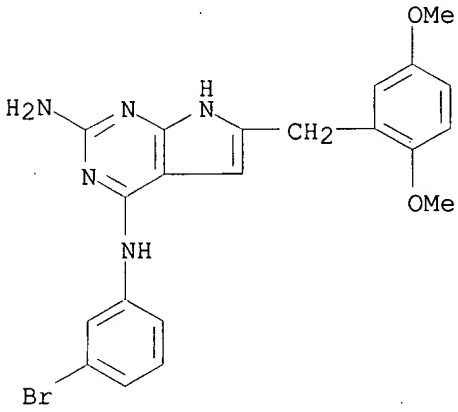
RN 514225-21-9 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



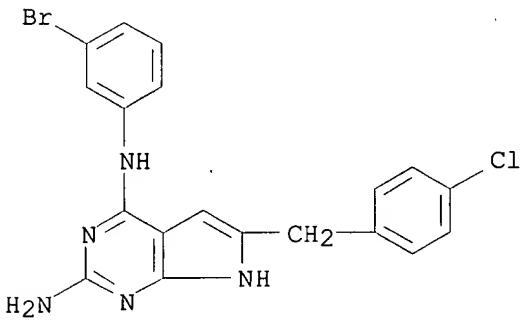
RN 514225-22-0 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[(2-methylphenyl)methyl]- (9CI) (CA INDEX NAME)



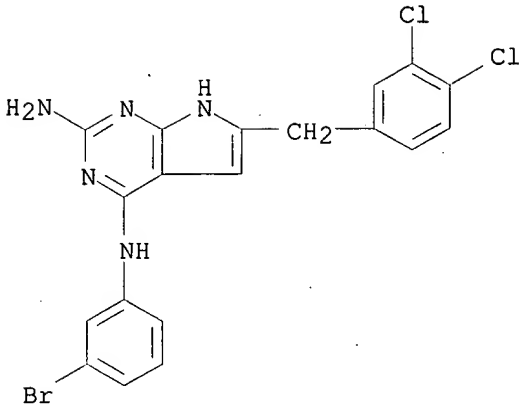
RN 514225-23-1 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[(2,5-dimethoxyphenyl)methyl]- (9CI) (CA INDEX NAME)



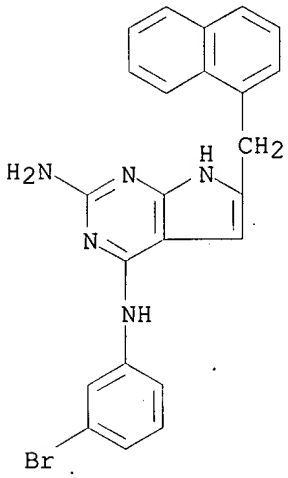
RN 514225-24-2 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[(4-chlorophenyl)methyl]- (9CI) (CA INDEX NAME)



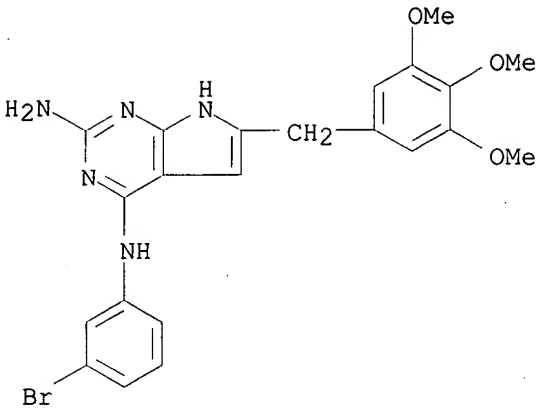
RN 514225-25-3 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[(3,4-dichlorophenyl)methyl]- (9CI) (CA INDEX NAME)



RN 514225-26-4 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-(1-naphthalenylmethyl)- (9CI) (CA INDEX NAME)



RN 514225-27-5 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, N4-(3-bromophenyl)-6-[(3,4,5-trimethoxyphenyl)methyl]- (9CI) (CA INDEX NAME)

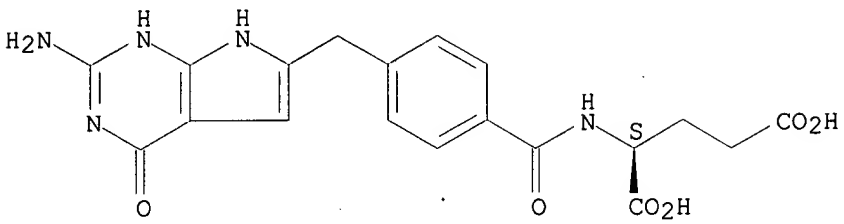


L6 ANSWER 2 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2002:744397 HCAPLUS
DOCUMENT NUMBER: 138:331186
TITLE: Effect of bridge truncation of classical 2,4-diamino-5-substituted furo [2,3-d]pyrimidine and 2-amino-4-oxo-6-substituted pyrrolo [2,3-d]pyrimidine on antifolate activity
AUTHOR(S): Gangjee, A.; Yang, J.; McGuire, J. J.; Kisliuk, R. L.
CORPORATE SOURCE: Division of Medicinal Chemistry, Graduate School of Pharmaceutical Science, Duquesne University, Pittsburgh, PA, 15282, USA
SOURCE: Chemistry and Biology of Pteridines and Folates, Proceedings of the International Symposium on Pteridines and Folates, 12th, Bethesda, MD, United States, June 17-22, 2001 (2002), Meeting Date 2001, 445-450. Editor(s): Milstien, Sheldon. Kluwer Academic Publishers: Norwell, Mass.
CODEN: 69DCHV; ISBN: 0-7923-7675-7
DOCUMENT TYPE: Conference
LANGUAGE: English

AB Studies have shown that the truncation of the two-carbon bridge of 2,4-diaminofuro[2,3-d]pyrimidine to a single carbon leads to a slight decrease in the dihydrofolate reductase (DHFR) and thymidylate synthase (TS) inhibitory activities, but a loss of cytotoxicity to CCRF-CEM cells in culture compared to the two-carbon bridged analog. Hence, the distance between the pyrimidine ring and the side chain L-glutamic acid in furo[2,3-d]pyrimidines is important for activity against the growth of tumor cells in culture. Furthermore, 6-substituted pyrrolo[2,3-d]pyrimidines are essentially inactive as antifolates indicating that the position of attachment to the heterocycle is important for the biol. activity.

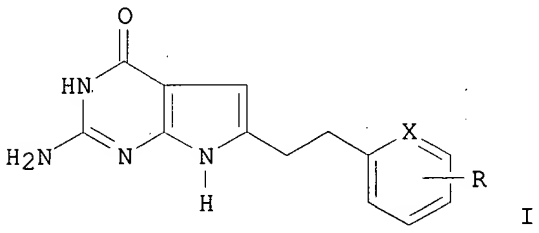
IT **518063-75-7P**.
RL: PAC (Pharmacological activity); PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(effect of bridge truncation of classical 2,4-diamino-5-substituted furo [2,3-d]pyrimidine and 2-amino-4-oxo-6-substituted pyrrolo [2,3-d]pyrimidine on antifolate and antitumor activity in human cells)
RN 518063-75-7 HCAPLUS
CN L-Glutamic acid, N-[4-[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2002:623946 HCAPLUS
DOCUMENT NUMBER: 138:55935
TITLE: 2-Amino-4-oxo-6-substituted-pyrrolo[2,3-d]pyrimidines as potential inhibitors of thymidylate synthase
AUTHOR(S): Gangjee, Aleem; Yu, Jianming; Kisliuk, Roy L.
CORPORATE SOURCE: Division of Medicinal Chemistry, Graduate School of Pharmaceutical Sciences, Duquesne University, Pittsburgh, PA, 15282, USA
SOURCE: Journal of Heterocyclic Chemistry (2002), 39(4), 833-840
CODEN: JHTCAD; ISSN: 0022-152X
PUBLISHER: HeteroCorporation
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 138:55935
GI



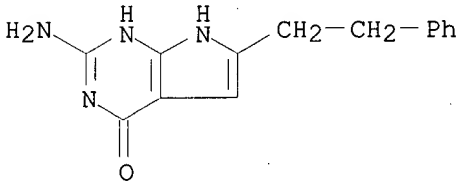
I

AB Classical, antifolate inhibitors of thymidylate synthase often suffer from a no. of potential disadvantages when used as antitumor agents. These include impaired uptake due to an alteration of the active transport system required for cellular uptake, as well as the formation of long acting, non-effluxing polyglutamates via folypolyglutamate synthetase, which are responsible for toxicity to normal cells. To overcome some of the disadvantages of classical thymidylate synthase inhibitors, there has been considerable interest in the synthesis and evaluation of nonclassical inhibitors, which could enter cells via passive diffusion and are not substrates for folypolyglutamate synthetase. A series of eight nonclassical 6-substituted 2-amino-4-oxo-pyrrolo[2,3-d]pyrimidines (I) were designed as potential inhibitors of thymidylate synthase. The synthesis of the target compds. I was achieved via regioselective iodination at the 6-position of 2-pivaloylaminopyrrolo[2,3-d]pyrimidin-4-

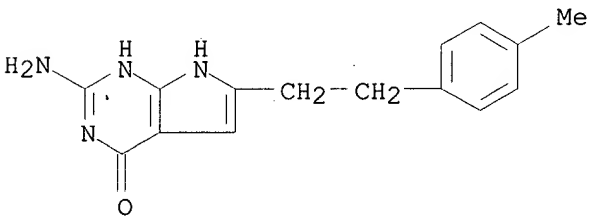
one, palladium-catalyzed coupling with the appropriate phenylacetylenes, redn. of the C8-C9 triple bond followed by sapon. Preliminary biol. results indicated that none of the target compds. showed inhibitory activities against thymidylate synthase from Escherichia coli, Lactobacillus casei, rat or human thymidylate synthase at the concns. tested. None of the target compds. showed inhibitory activity against dihydrofolate reductase from Escherichia coli, Lactobacillus casei, rat or human at 3.0 .times. 10-5 M. However, 50% inhibition of dihydrofolate reductase from Pneumocystis carinii and from Toxoplasma gondii was achieved with compd. I (R = o-Cl, X = CH) and with compd. I (R = 3',4'-C4H4, X = CH) at 3.0 .times. 10-5 M.

IT **364387-42-8P 479546-70-8P 479546-71-9P 479546-72-0P 479546-73-1P 479546-74-2P 479546-75-3P 479546-76-4P**
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(prepn. of aminooxo-pyrrolo[2,3-d]pyrimidines as potential inhibitors of thymidylate synthase and dihydrofolate reductase)

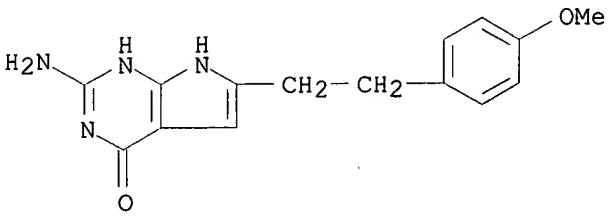
RN 364387-42-8 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-(2-phenylethyl)- (9CI) (CA INDEX NAME)



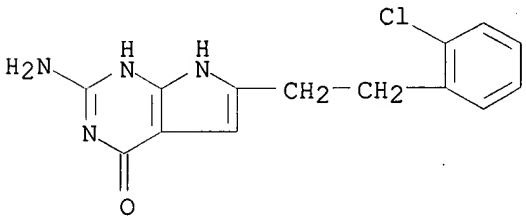
RN 479546-70-8 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-(4-methylphenyl)ethyl]- (9CI) (CA INDEX NAME)



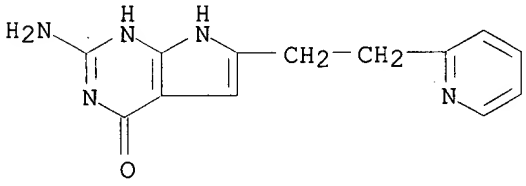
RN 479546-71-9 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-(4-methoxyphenyl)ethyl]- (9CI) (CA INDEX NAME)



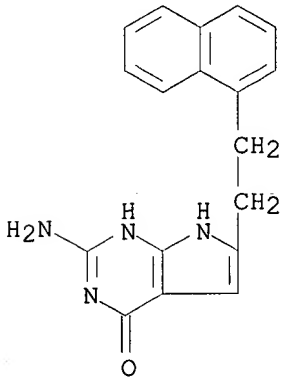
RN 479546-72-0 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-(2-chlorophenyl)ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



RN 479546-73-1 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-(2-pyridinyl)ethyl]- (9CI) (CA INDEX NAME)



RN 479546-74-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-(1-naphthalenyl)ethyl]- (9CI) (CA INDEX NAME)



RN 479546-75-3 HCAPLUS
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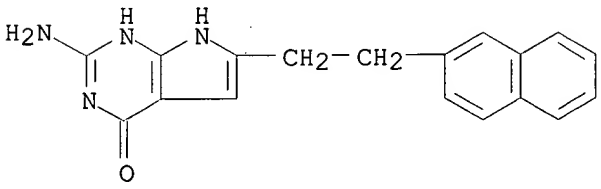
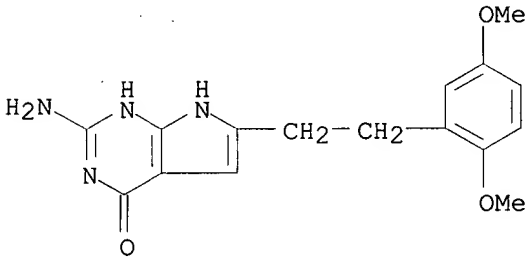


RN 479546-76-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-(2,5-dimethoxyphenyl)ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



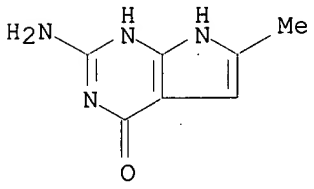
REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 4 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:843338 HCAPLUS
DOCUMENT NUMBER: 136:98303
TITLE: Structure-Based Design and Characterization of Novel Platforms for Ricin and Shiga Toxin Inhibition
AUTHOR(S): Miller, Darcie J.; Ravikumar, Kabyadi; Shen, Huafeng; Suh, Jung-Keun; Kerwin, Sean M.; Robertus, Jon D.
CORPORATE SOURCE: Department of Chemistry and Biochemistry and Division of Medicinal Chemistry, College of Pharmacy, University of Texas, Austin, TX, 78712, USA
SOURCE: Journal of Medicinal Chemistry (2002), 45(1), 90-98
CODEN: JMCMAR; ISSN: 0022-2623
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Ribosome inhibiting proteins, RIPs, are a widespread family of toxic enzymes. Ricin is a plant toxin used as a poison and biol. warfare agent; shiga toxin is a homolog expressed by pathogenic strains of E. coli. There is interest in creating effective antidote inhibitors to this class of enzymes. RIPs act by binding and hydrolyzing a specific adenine base from rRNA. Previous virtual screens revealed that pterins could bind in the specificity pocket of ricin and inhibit the enzyme. In this paper we explore a range of compds. that could serve as better platforms for inhibitor design. This establishes the importance of key hydrogen bond donors and acceptors for active-site complementarity. 8-Methyl-9-oxoguanine is a sol. compd. that has the best inhibitory

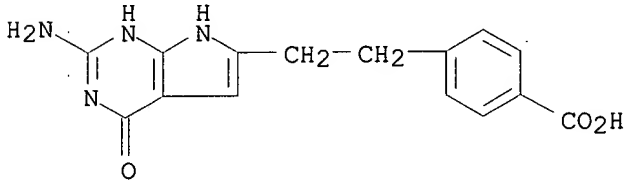
properties of any platform tested. The X-ray structure of this complex revealed that the inhibitor binds in an unexpected way that provides insight for future design. Several inhibitors of ricin were also shown to be inhibitors of Shiga toxin, suggesting this program has the potential to develop effective antidotes to an important form of food poisoning.

IT **62981-82-2 151937-10-9**
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(structure-based design suggests novel platforms for inhibitors of ricin and Shiga toxin)

RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



RN 151937-10-9 HCAPLUS
CN Benzoic acid, 4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 5 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:731181 HCAPLUS
DOCUMENT NUMBER: 135:284458
TITLE: Ricin inhibitors and methods for use thereof
INVENTOR(S): Robertus, Jon; Kerwin, Sean Michael; Yan, Xinjian
PATENT ASSIGNEE(S): Research Development Foundation, USA
SOURCE: PCT Int. Appl., 116 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001073438	A1	20011004	WO 2001-US9400	20010323

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,

SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

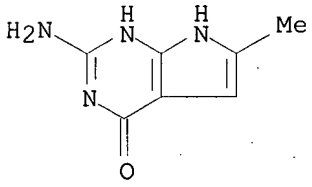
US 6562969 B1 20030513 US 2000-535460 20000324

PRIORITY APPLN. INFO.: US 2000-535460 A 20000324
US 1996-773398 B2 19961224
US 1998-118535 A2 19980717

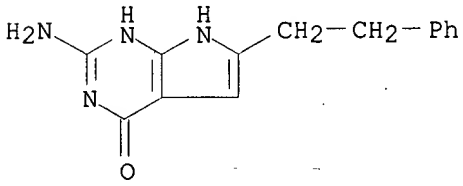
AB Ricin A-chain is an N-glycosidase that attacks rRNA at a highly conserved adenine residue. Crystallog. studies show that not only adenine and formycin, but also pterin-based rings can bind in the ricin active site. For a better understanding of the recognition mode between ricin, and adenine-like rings, the interaction energies and geometries were calcd. for a no. of complexes. Shiga toxin, a compd. essentially identical to the protein originally isolated from Shigella dysenteriae, has an active protein chain that is a homolog of the ricin active chain, and catalyzes the same depurination reaction. The present invention is drawn to identifying inhibitors of ricin and Shiga toxin, using methods mol. mechanics and ab initio methods and using the identified inhibitors as antidotes to ricin or Shiga toxin, or to facilitate immunotoxin treatment by controlling non-specific cytotoxicity.

IT **62981-82-2P 364387-42-8P**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(ricin inhibitors and methods for use)

RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



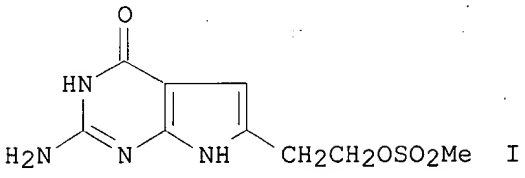
RN 364387-42-8 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-(2-phenylethyl)- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 6 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:341929 HCAPLUS

DOCUMENT NUMBER: 135:122469
TITLE: Synthesis of novel, nonclassical 2-amino-4-oxo-6-(arylthio)ethylpyrrolo[2,3-d]pyrimidines as potential inhibitors of thymidylate synthase
AUTHOR(S): Gangjee, Aleem; Dubash, Nauzer P.; Kisliuk, Roy L.
CORPORATE SOURCE: Division of Medicinal Chemistry, Graduate School of Pharmaceutical Sciences, Duquesne University, Pittsburgh, PA, 15282, USA
SOURCE: Journal of Heterocyclic Chemistry (2001), 38(2), 349-354
CODEN: JHTCAD; ISSN: 0022-152X
PUBLISHER: HeteroCorporation
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 135:122469
GI

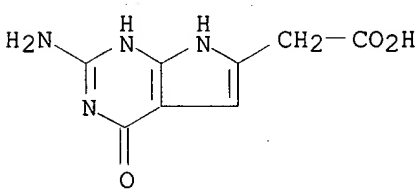


I

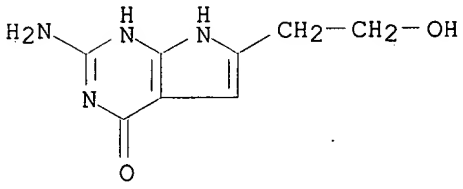
AB Fourteen nonclassical 6-substituted pyrrolo[2,3-d]pyrimidines I were designed as potential inhibitors of thymidylate synthase, based on previously reported 2-amino-4-oxopyrrolo[2,3-d]pyrimidines. The synthesis of the target compds. I was accomplished by nucleophilic displacement of the mesylate II with appropriately substituted arom. thiols. Most of the target compds. did not show inhibition of either Escherichia coli thymidylate synthase or recombinant human thymidylate synthase at the concns. tested. However,the 2,4-dichloro, 3,4-dichloro and 4-nitro derivs. of I did show 25%, 40% and 35% inhibition of human thymidylate synthase at 23 .mu.M, 23 .mu.M and 24 .mu.M, resp. These observations are in accordance with previous reports, which suggest that strong electron withdrawing substituents on the side chain arom. ring are conducive to inhibition of thymidylate synthase.

IT **351185-23-4P 351185-24-5P 351185-25-6P 351185-26-7P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reactant for prepn. of 2-amino-4-oxo-6-(arylthio)ethylpyrrolo[2,3-d]pyrimidines as potential inhibitors of thymidylate synthase)

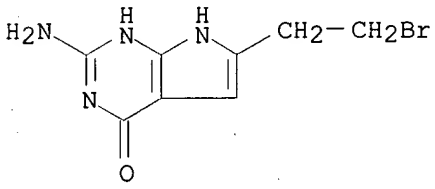
RN 351185-23-4 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-acetic acid, 2-amino-4,7-dihydro-4-oxo- (9CI) (CA INDEX NAME)



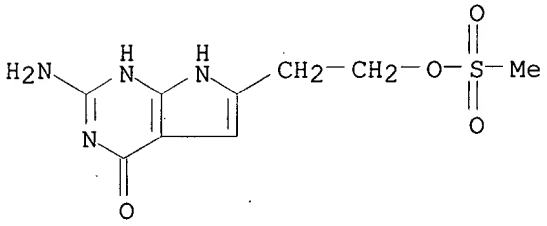
RN 351185-24-5 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-(2-hydroxyethyl)- (9CI) (CA INDEX NAME)



RN 351185-25-6 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-(2-bromoethyl)-1,7-dihydro- (9CI) (CA INDEX NAME)

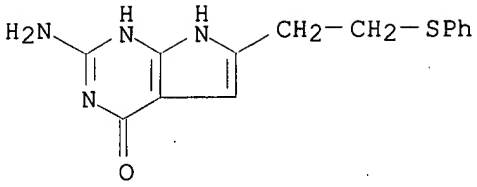


RN 351185-26-7 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-[(methylsulfonyl)oxy]ethyl]- (9CI) (CA INDEX NAME)

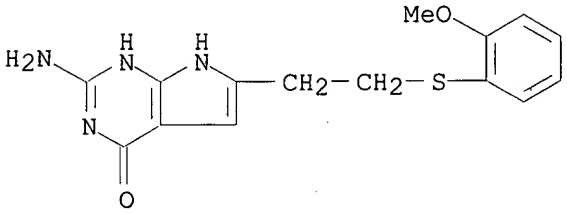


IT **351185-09-6P 351185-10-9P 351185-11-0P**
351185-12-1P 351185-13-2P 351185-14-3P
351185-15-4P 351185-16-5P 351185-17-6P
351185-18-7P 351185-19-8P 351185-20-1P
351185-21-2P 351185-22-3P
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(synthesis of novel, nonclassical 2-amino-4-oxo-6-(arylthio)ethylpyrrolo[2,3-d]pyrimidines as potential inhibitors of thymidylate synthase)

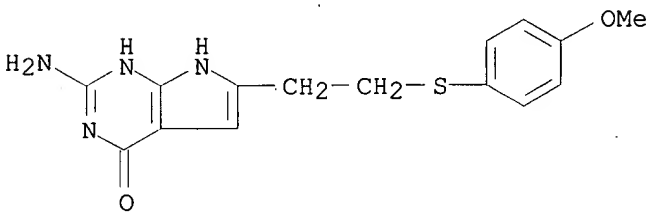
RN 351185-09-6 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-(phenylthio)ethyl]- (9CI) (CA INDEX NAME)



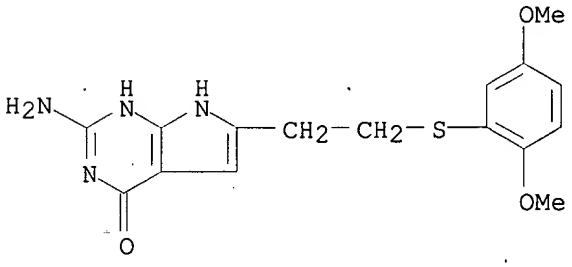
RN 351185-10-9 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-[(2-methoxyphenyl)thio]ethyl]- (9CI) (CA INDEX NAME)



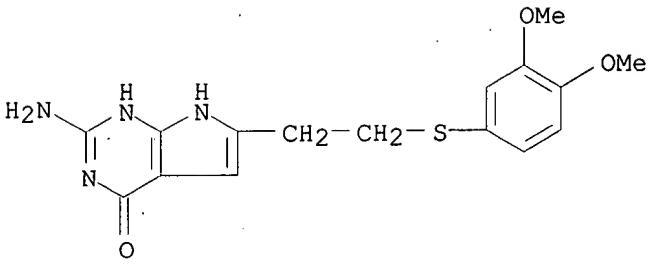
RN 351185-11-0 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-[(4-methoxyphenyl)thio]ethyl]- (9CI) (CA INDEX NAME)



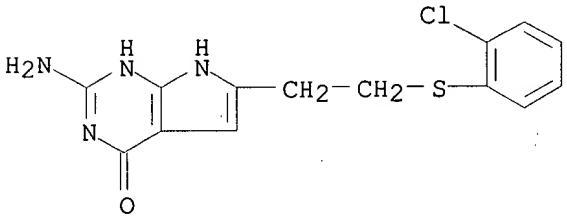
RN 351185-12-1 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(2,5-dimethoxyphenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



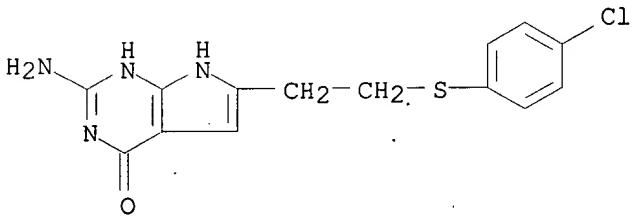
RN 351185-13-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(3,4-dimethoxyphenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



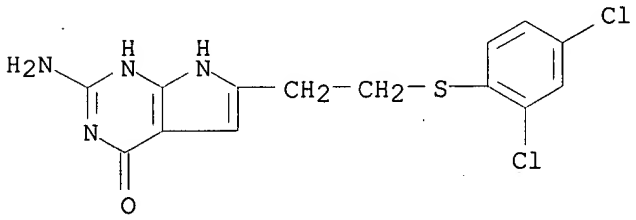
RN 351185-14-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(2-chlorophenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



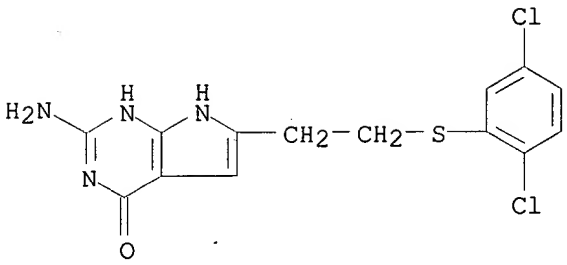
RN 351185-15-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(4-chlorophenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



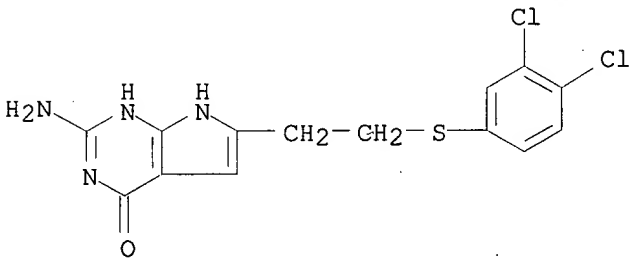
RN 351185-16-5 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(2,4-dichlorophenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



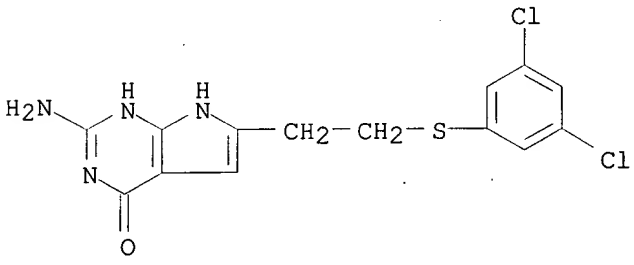
RN 351185-17-6 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(2,5-dichlorophenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



RN 351185-18-7 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(3,4-dichlorophenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



RN 351185-19-8 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[2-[(3,5-dichlorophenyl)thio]ethyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



RN 351185-20-1 HCAPLUS
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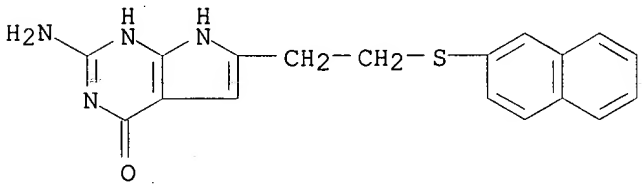
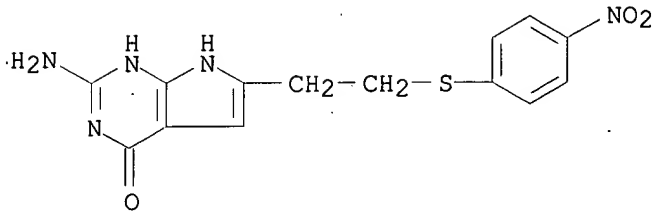
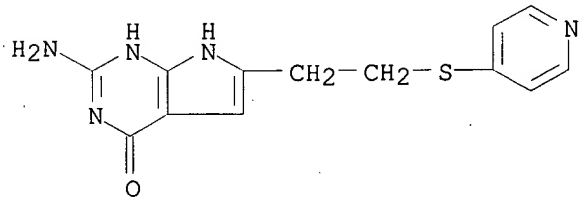


RN 351185-21-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-[(4-

nitrophenyl)thio]ethyl]- (9CI) (CA INDEX NAME)



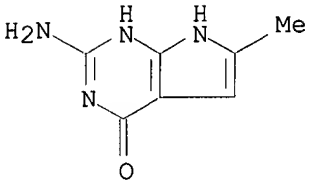
RN 351185-22-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[2-(4-pyridinylthio)ethyl]- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

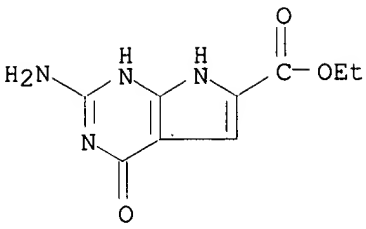
L6 ANSWER 7 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:269020 HCAPLUS
DOCUMENT NUMBER: 135:19867
TITLE: The C8-(2'-Deoxy-.beta.-D-ribofuranoside) of 7-Deazaguanine: Synthesis and Base Pairing of Oligonucleotides with Unusually Linked Nucleobases
AUTHOR(S): Seela, Frank; Debelak, Harald
CORPORATE SOURCE: Laboratorium fuer Organische und Bioorganische Chemie Institut fuer Chemie, Universitaet Osnabrueck, Osnabrueck, D-49069, Germany
SOURCE: Journal of Organic Chemistry (2001), 66(10), 3303-3312 CODEN: JOCEAH; ISSN: 0022-3263
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 135:19867
AB The 7-deazaguanine (2-aminopyrrolo[2,3-d]pyrimidin-4-one) C8-(2'-deoxy-.beta.-D-ribofuranoside) (I), which possesses an unusual glycosylation site, was synthesized and incorporated in oligonucleotides. The oligonucleotides were prepd. by solid-phase synthesis using phosphoramidite chem. and were hybridized to form duplex DNA. Compd. I is able to form base pairs with 2'-deoxy-5-methylisocytidine (m5isoCd) in oligonucleotide duplexes with antiparallel chain orientation and with dC in parallel duplex DNA. Thus, the C8-nucleoside I shows a similar base recognition as 2'-deoxyisoguanosine but not as 2'-deoxyguanosine. This indicates that the nucleic acid recognition not only depends on the donor-acceptor pattern of the nucleobase but is influenced by the glycosylation site. Base pairs of compd. I formed with canonical and modified nucleosides are proposed.
IT **62981-82-2P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(solid-phase synthesis, base pairing, and thermodn. of oligonucleotide duplexes with unusually linked nucleobases)
RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)

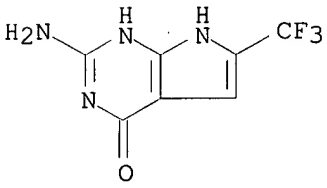


REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

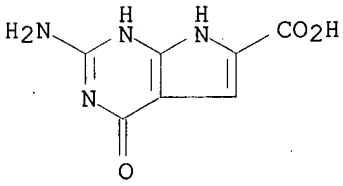
L6 ANSWER 8 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1998:598995 HCAPLUS
DOCUMENT NUMBER: 130:3819
TITLE: Specific inhibitors in vitamin biosynthesis. Part 10. Synthesis of 7- and 8-substituted 7-deazaguanines
AUTHOR(S): Gibson, Colin L.; Ohta, Kyuji; Paulini, Klaus; Suckling, Colin J.
CORPORATE SOURCE: Department of Pure and Applied Chemistry, University of Strathclyde, Glasgow, G1 1XL, UK
SOURCE: Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1998), (18), 3025-3032
CODEN: JCPRB4; ISSN: 0300-922X
PUBLISHER: Royal Society of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Versatile syntheses of 7- and 8-substituted 7-deazaguanines including N-alkyl derivs. have been developed by identifying selective annulation reactions with 2,6-diaminopyrimidin-4(3H)-one as substrate and .beta.-halocarbonyl compds. as electrophiles. A new synthesis of 8-substituted 7-deazaguanines using nitrosoalkenes as electrophiles is described. With some combinations of reactants, furo[2,3-d]pyrimidines are significant products in place of or in addn. to the required 7-deazaguanines [pyrrolo[2,3-d]pyrimidin-4(3H)-ones]. When 2,4-diamino-6-chloropyrimidine was used as a substrate, imidazopyrimidines were produced.
IT **188062-43-3P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. of 7- and 8-substituted 7-deazaguanines)
RN 188062-43-3 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-carboxylic acid, 2-amino-4,7-dihydro-4-oxo-, ethyl ester (9CI) (CA INDEX NAME)



IT **188062-36-4P 188062-46-6P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of 7- and 8-substituted 7-deazaguanines)
RN 188062-36-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-(trifluoromethyl)-(9CI) (CA INDEX NAME)



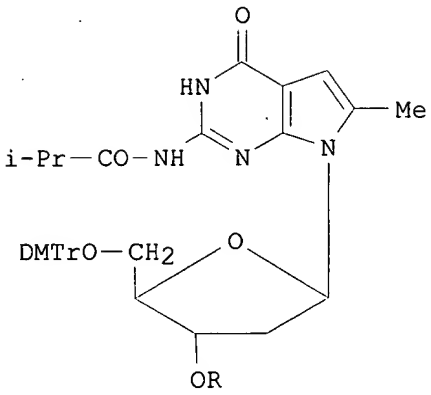
RN 188062-46-6 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-carboxylic acid, 2-amino-4,7-dihydro-4-oxo-(9CI) (CA INDEX NAME)



REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 9 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1998:227585 HCAPLUS
DOCUMENT NUMBER: 128:257654
TITLE: 7-Deazapurine oligodeoxyribonucleotides. The effects of 7-deaza-8-methylguanine on DNA structure and stability
AUTHOR(S): Seela, Frank; Chen, Yaoming; Mittelbach, Cathrin
CORPORATE SOURCE: Laboratorium Organische Bioorganische Chemie, Institut Chemie, Universitaet Osnabrueck, Osnabrueck, D-49069, Germany
SOURCE: Helvetica Chimica Acta (1998), 81(3), 570-583
CODEN: HCACAV; ISSN: 0018-019X
PUBLISHER: Verlag Helvetica Chimica Acta AG
DOCUMENT TYPE: Journal
LANGUAGE: English

GI



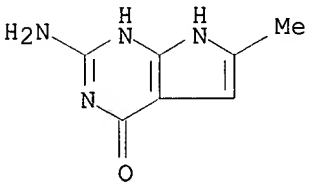
II

AB Oligodeoxyribonucleotides contg. 7-deaza-2'-deoxy-8-methylguanosine (m8c7Gd; I) were prepd. For this purpose, phosphonate and phosphoramidite II [DMTr= 4,4'-dimethoxytrityl; R = PH(O)O-Et3NH+, PN(CHMe2)2O(CH2)2CN] were synthesized and employed in solid-phase oligodeoxyribonucleotide synthesis. The structures and the thermodn. data of duplex formation of oligodeoxyribonucleotides contg. I were investigated by temp.-dependent CD and UV spectra and compared with those contg. 7-deaza-2'-deoxy-7-methylguanosine (m7c7Gd) or 7-deaza-2'-deoxyguanosine (c7Gd). In general, I reduces the duplex stability. In case of the sequence d(m8c7G-C)4, the B.fwdarw.Z transition was facilitated by the incorporation of I. Moreover, a single 7-deaza-8-methylguanine residue present in an oligodeoxyribonucleotide tract of guanine residues destabilizes the dG quadruplex significantly. This destabilization is more pronounced than in the case of 7-deazaguanine or 7-deaza-7-methylguanine.

IT **62981-82-2**
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of deazapurine oligodeoxyribonucleotides)

RN 62981-82-2 HCAPLUS

CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



L6 ANSWER 10 OF 29 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1997:168983 HCAPLUS

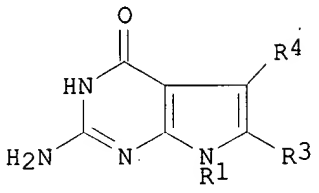
DOCUMENT NUMBER: 126:211962

TITLE: Synthesis of potential inhibitors of GTP-cyclohydrolase I: an efficient synthesis of 8-substituted 7-deazaguanines

AUTHOR(S): Gibson, Colin L.; Paulini, Klaus; Suckling, Colin J.

CORPORATE SOURCE: Dep. Pure & Applied Chem., Univ. Strathclyde, Glasgow,

G1 1XL, UK
SOURCE: Chemical Communications (Cambridge) (1997), (4), 371-372
CODEN: CHCOFS; ISSN: 1359-7345
PUBLISHER: Royal Society of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

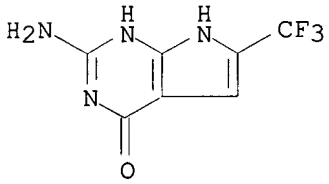


I

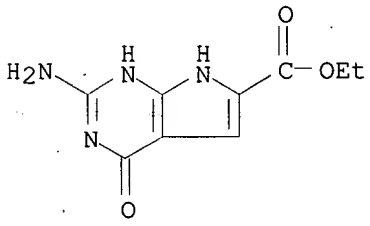
AB A novel two step synthesis of 8-substituted 7-deazaguanines is developed and involves the regioselective alkylation of pyrimidinones with nitrosoalkenes derived from .alpha.-halo oximes followed by transoximation to give the 7-deazaguanines I [R1 = H, (CH2)2O(CH2)2OH; R3 = CF3, CO2Et, CO2H; R4 = H; R3,R4 = (CH2)4] in 41-65% overall yield.

IT **188062-36-4P 188062-43-3P 188062-46-6P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(synthesis of deazaguanines as potential inhibitors of GTP-cyclohydrolase)

RN 188062-36-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-(trifluoromethyl)-(9CI) (CA INDEX NAME)

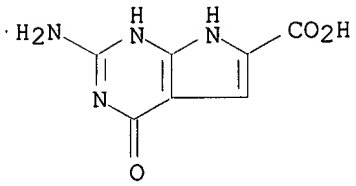


RN 188062-43-3 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-carboxylic acid, 2-amino-4,7-dihydro-4-oxo-, ethyl ester (9CI) (CA INDEX NAME)



RN 188062-46-6 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-carboxylic acid, 2-amino-4,7-dihydro-4-oxo-

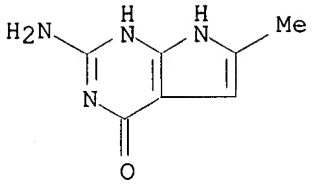
(9CI) (CA INDEX NAME)



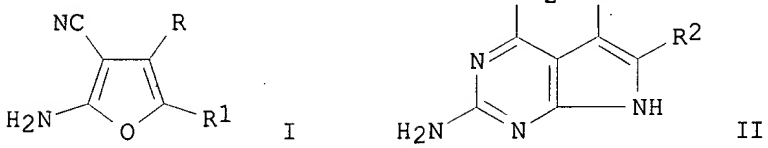
L6 ANSWER 11 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1996:628615 HCAPLUS
DOCUMENT NUMBER: 126:363
TITLE: 2-Amino-4-oxo-5-substituted-pyrrolo[2,3-d]pyrimidines as Nonclassical Antifolate Inhibitors of Thymidylate Synthase
AUTHOR(S): Gangjee, Aleem; Mavandadi, Farahnaz; Kisliuk, Roy L.; McGuire, John J.; Queener, Sherry F.
CORPORATE SOURCE: Graduate School of Pharmaceutical Sciences, Duquesne University, Pittsburgh, PA, 15282, USA
SOURCE: Journal of Medicinal Chemistry (1996), 39(23), 4563-4568
CODEN: JMCMAR; ISSN: 0022-2623
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Six novel 2-amino-4-oxo-5-[(substituted phenyl)sulfanyl]pyrrolo[2,3-d]-pyrimidines were synthesized as potential inhibitors of thymidylate synthase (TS) and as antitumor and/or antibacterial agents. The analogs contain a 5-thio substituent with a Ph, 4'-chlorophenyl, 3',4'-dichlorophenyl, 4'-nitrophenyl, 3',4'-dimethoxyphenyl, and 2'-naphthyl on the sulfur. The compds. were evaluated against human, Lactobacillus casei, Escherichia coli, Streptococcus faecium, and Pneumocystis carinii (pc) TSs and against human, rat liver (rl), pc, and Toxoplasma gondii (tg) DHFRs. The nonclassical analogs with the 3',4'-dichloro and the 4'-nitro substituents in the side chain were more potent than N-[4-[N-[(2-amino-3,4-dihydro-4-oxo-6-quinazolinyl)methyl]-N-prop-2-ynylamino]benzoyl]-L-glutamic acid and N-[5-[N-[(3,4-dihydro-2-methyl-4-oxo-6-quinazolinyl)methyl]-N-methylamino]-2-thenoyl]-L-glutamic acid against human TS. Analogs with the 4'-chloro, 3',4'-dimethoxy, and naphthyl side chains were more potent than the unsubstituted Ph analog. They were all poor inhibitors of human, rl, and pc DHFRs (IC50 = 10-5 M) but moderate inhibitors (IC50 = 10-6 M) of tg DHFR. The 4-nitro analog (EC50 1.5 .mu.M) was comparable to PDDF in its potency as an inhibitor of the growth of the FaDu human squamous cell carcinoma cell line.

IT **62981-82-2P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(intermediate; prepn. of pyrrolopyrimidines as antifolate inhibitors of thymidylate synthase and antitumor agents)
RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



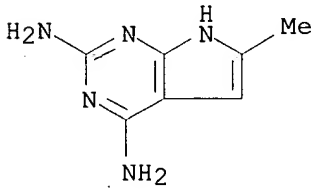
L6 ANSWER 12 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1996:543486 HCAPLUS
DOCUMENT NUMBER: 125:300935
TITLE: Regioselective synthesis of 2-amino-3-cyanofuran derivatives and their guanidine cyclization reactions
AUTHOR(S): Jun, Jong-Gab
CORPORATE SOURCE: Dep. of Chemistry, Hallym Univ., Chunchon, 200-702, S. Korea
SOURCE: Bulletin of the Korean Chemical Society (1996), 17(8), 676-678
CODEN: BKCSDE; ISSN: 0253-2964
PUBLISHER: Korean Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



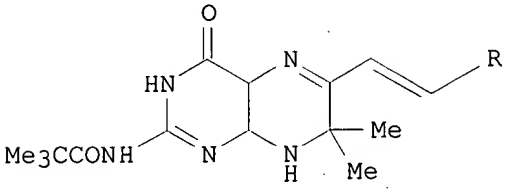
AB Aminocyanofurans I (R = Me, Et, Ph, R' = H; R = H, R' = Me, Ph) were prepd. by reacting RCOCH2OH (R = Me, Et, Ph) or RCOCH2Cl (R = Me, Et) with CH2(CN)2 in Et3N/MeOH. I underwent cyclization with guanidine to give pyrrolopyrimidines II in 31-67% yields.

IT **182427-26-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of aminocyanofurans and pyrrolopyrimidines)

RN 182427-26-5 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, 6-methyl- (9CI) (CA INDEX NAME)



L6 ANSWER 13 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1996:94214 HCAPLUS
DOCUMENT NUMBER: 124:201885
TITLE: Pteridines and purines as probes and inhibitors of folate biosynthesis
AUTHOR(S): Lang, Angus; Dunn, Caroline; Paulini, Klaus; Gibson, Colin L.; Rice, Martin J.; Suckling, Colin J.
CORPORATE SOURCE: Dep. Pure and Applied Chemistry, Univ. Strathclyde, Glasgow, G1 1XL, UK
SOURCE: Pteridines (1995), 6(3), 90-2
CODEN: PTRDEO; ISSN: 0933-4807
PUBLISHER: International Society of Pteridinology
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

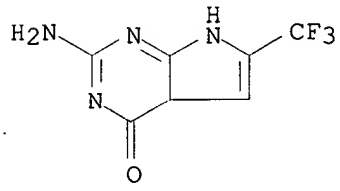


I

AB 8-Trifluoromethyl-7-deazaguanine was prepd. by treating 2,6-diamino-4(3H)-pyrimidinone with BrCH2C(CF3):NOH and cyclization. Pteridines I [R = CO2Me, CO2Et, CH:CHCO2Me, CHO, CONHCH2OMe, CONMeOMe] were obtained by Wittig reactions of the formylpteridine.

IT **174541-94-7P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of pteridines and purines as probes and inhibitors of folate biosynthesis)

RN 174541-94-7 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,4a-dihydro-6-(trifluoromethyl)- (9CI) (CA INDEX NAME)

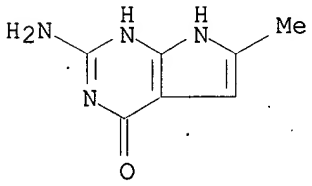


L6 ANSWER 14 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1995:897070 HCAPLUS
DOCUMENT NUMBER: 124:24713
TITLE: tRNA-Guanine Transglycosylase from Escherichia coli: Structure-Activity Studies Investigating the Role of the Aminomethyl Substituent of the Heterocyclic Substrate PreQ1
AUTHOR(S): Hoops, Geoffrey C.; Townsend, Leroy B.; Garcia, George

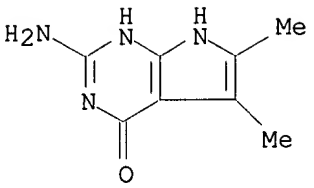
A.
CORPORATE SOURCE: College of Pharmacy, University of Michigan, Ann Arbor, MI, 48109-1065, USA
SOURCE: Biochemistry (1995), 34(46), 15381-7
CODEN: BICHAW; ISSN: 0006-2960
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A series of 5-substituted 2-aminopyrrolo[2,3-d]pyrimidin-4(3H)-ones have been synthesized to study the substrate specificity of the tRNA-guanine transglycosylase (TGT) from Escherichia coli. A no. of these compds. were initially examd. as inhibitors of radiolabeled guanine incorporation into tRNA catalyzed by TGT [Hoops, G. C., Garcia, G. A., & Townsend, L. B. (1992) 204th National Meeting of the American Chem. Society, Washington, DC, August 23-28, 1992.]. The kinetic parameters of these analogs as substrates in the TGT reaction have been detd. by monitoring the loss of radiolabeled guanine from 8-[14C]G34-tRNA. This study reveals that the tRNA-guanine transglycosylase from E. coli will tolerate a wide variety of substituents at the 5-position. The role of the 5-substituent appears to be entirely in binding/recognition with no apparent effects upon catalysis. A correlation between N7 pKa and Vmax suggests the deprotonation of N7 during the reaction, which must occur prior to subsequent glycosidic bond formation, appears to be partially rate-detg. for the natural substrate. Comparison of the Kis of 7-methyl-substituted competitive inhibitors to the Kms of their corresponding substrates suggests that some substrates (including preQ1) are kinetically "sticky" (i.e., Km is equiv. to Kd) and other substrates have Kms that reflect catalytic rates as well as binding.

IT **62981-82-2 67194-81-4**
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(structure-reactivity studies of Escherichia coli tRNA-guanine transglycosylase substrate analogs (2-aminopyrrolo[2,3-d]pyrimidin-4(3H)-one derivs.))

RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



RN 67194-81-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-5,6-dimethyl- (9CI) (CA INDEX NAME)



L6 ANSWER 15 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1995:849918 HCAPLUS
DOCUMENT NUMBER: 124:56592
TITLE: 5-Arylthio Substituted 2-Amino-4-oxo-6-methylpyrrolo[2,3-d]pyrimidine Antifolates as Thymidylate Synthase Inhibitors and Antitumor Agents
AUTHOR(S): Gangjee, Aleem; Devraj, Rajesh; McGuire, John J.; Kisliuk, Roy L.
CORPORATE SOURCE: Graduate School of Pharmaceutical Sciences, Duquesne University, Pittsburgh, PA, 15282, USA
SOURCE: Journal of Medicinal Chemistry (1995), 38(22), 4495-502
CODEN: JMCMAR; ISSN: 0022-2623
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

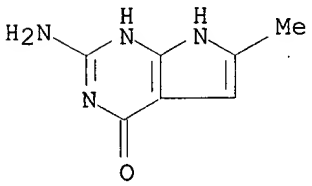
AB Classical antifolate inhibitors of thymidylate synthase (TS) often require the reduced folate uptake system in order to exert their antitumor effects. In addn., these analogs are polyglutamylated via the enzyme folylpoly-.gamma.-glutamate synthetase (FPGS), which prevents analog efflux from the cell and usually increases their inhibitory potency against TS. Impaired function of the reduced folate uptake system and that of FPGS are potential sources of resistance to such antifolates. This paper describes the synthesis of 6-5 ring-fused analog N-[4-[(2-amino-6-methyl-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidin-5-yl)thio]benzoyl]-L-glutamic acid and a nonclassical 6-5 ring-fused analog 2-amino-6-methyl-5-(pyridin-4-ylthio)-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidine as TS inhibitors and antitumor agents. The synthesis of these analogs was achieved via the oxidative addn. of the sodium salt of Et 4-mercaptobenzoate or 4-mercaptopyridine to 2-(pivaloylamino)-6-methyl-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidine in the presence of iodine. 2-Amino-6-methyl-5-(pyridin-4-ylthio)-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidine was 10-fold less potent than N-[4-[(2-amino-6-methyl-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidin-5-yl)thio]benzoyl]-L-glutamic acid against human TS but more than 4700-fold less potent than N-[4-[(2-amino-6-methyl-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidin-5-yl)thio]benzoyl]-L-glutamic acid against Lactobacillus casei TS. The classical analog N-[4-[(2-amino-6-methyl-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidin-5-yl)thio]benzoyl]-L-glutamic acid was neither a substrate nor an inhibitor of human FPGS derived from CCRF-CEM cells. N-[4-[(2-amino-6-methyl-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidin-5-yl)thio]benzoyl]-L-glutamic acid was cytotoxic to CCRF-CEM and FaDu tumor cell lines as well as to an FPGS-deficient subline of CCRF-CEM. Thymidine protection studies established that TS was the primary target of N-[4-[(2-amino-6-methyl-3,4-dihydro-4-oxo-7H-pyrrolo[2,3-d]pyrimidin-5-yl)thio]benzoyl]-L-glutamic acid .

IT **62981-82-2P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(arylthio substituted aminooxomethylpyrrolo[2,3-d]pyrimidine antifolates as thymidylate synthase inhibitors and antitumor agents)

RN 62981-82-2 HCAPLUS

CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



L6 ANSWER 16 OF 29 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1995:833632 HCAPLUS

DOCUMENT NUMBER: 123:313913

TITLE: A One-Step Ring Transformation/Ring Annulation Approach to Pyrrolo[2,3-d]pyrimidines. A New Synthesis of the Potent Dihydrofolate Reductase Inhibitor TNP-351

AUTHOR(S): Taylor, Edward C.; Patel, Hemantkumar H.; Jun, Jong-Gab

CORPORATE SOURCE: Department of Chemistry, Princeton University, Princeton, NJ, 08544, USA

SOURCE: Journal of Organic Chemistry (1995), 60(21), 6684-7
CODEN: JOCEAH; ISSN: 0022-3263

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

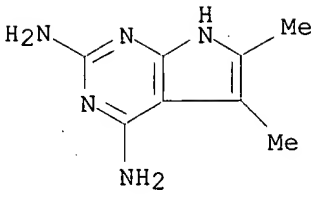
OTHER SOURCE(S): CASREACT 123:313913

AB Condensation of amidines with 2-amino-3-cyanofurans gives 2-substituted-4-aminopyrrolo[2,3-d]pyrimidines by a ring-opening, ring-recyclization sequence of reactions through which the starting furan 2-amino nitrogen becomes the pyrrole nitrogen of the final product and one of the amidine nitrogens becomes N-1 of the fused pyrimidine ring. 2,4-Diamino-5-[2-(4-carbethoxyphenyl)ethyl]pyrrolo[2,3-d]pyrimidine, a key intermediate in the synthesis of the dihydrofolate reductase inhibitor TNP-351, has been prepd. in one step by reaction of 4-[2-(2-amino-3-cyano-4-furanyl)ethyl]benzoic acid Et ester with guanidine.

IT **103026-42-2P**, 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, 5,6-dimethyl
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of pyrrolo[2,3-d]pyrimidines from guanidines and (amino)furancarbonitriles)

RN 103026-42-2 HCAPLUS

CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, 5,6-dimethyl- (9CI) (CA INDEX NAME)



L6 ANSWER 17 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1994:671431 HCAPLUS
DOCUMENT NUMBER: 121:271431
TITLE: Novel pyrrolo[2,3-d]pyrimidine antifolate TNP-351: cytotoxic effect on methotrexate-resistant CCRF-CEM cells and inhibition of transformylases of de novo purine biosynthesis
AUTHOR(S): Itoh, Fumio; Russello, Orsola; Akimoto, Hiroshi; Beardsley, G. Peter
CORPORATE SOURCE: Pharm. Res. Div., Takeda Chem. Ind., Ltd., Osaka, 532, Japan
SOURCE: Cancer Chemotherapy and Pharmacology (1994), 34(4), 273-9
CODEN: CCPHDZ; ISSN: 0344-5704
DOCUMENT TYPE: Journal
LANGUAGE: English

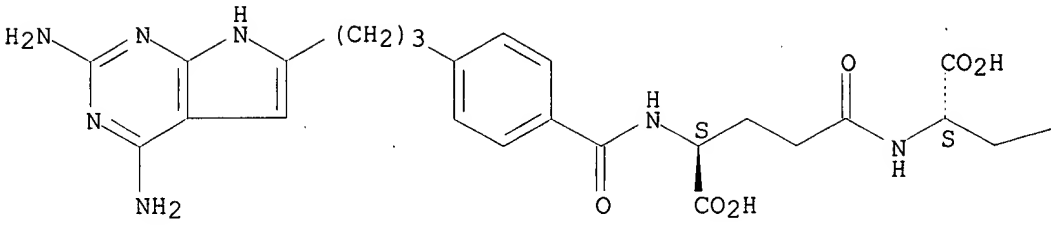
AB N-{4-[3-(2,4-Diamino-7H-pyrrolo[2,3-d]pyrimidin-5-yl)propyl]benzoyl}-L-glutamic acid (TNP-351), characterized by a pyrrolo[2,3-d]pyrimidine ring, is a novel antifolate that exhibits potent antitumor activities against mammalian solid tumors. The mechanism of action of TNP-351 was evald. using some methotrexate-resistant CCRF-CEM human lymphoblastic leukemia cell lines as well as partially purified folylpolyglutamate synthetase (FPGS), aminoimidazolecarboxamide ribonucleotide transformylase (AICARTFase), and glycinamide ribonucleotide transformylase (GARTFase) from parent CCRF-CEM cells. TNP-351 was found to inhibit the growth of L1210 and CCRF-CEM cells in culture, with the doses effective against 50% of the cells (ED50 values) being 0.79 and 2.7 nM, resp. The growth inhibition caused by TNP-351 was reversed by leucovorin or a combination of hypoxanthine and thymidine. The methotrexate-resistant CCRF-CEM cell line, which has an impaired methotrexate transport, showed less resistance to TNP-351 than to methotrexate. TNP-351 was also an excellent substrate for FPGS with a Michaelis const. (Km) of 1.45 .mu.M and a max. of vel. (Vmax) of 1.925 pmol h-1 mg-1. Inhibitory activities of TNP-351-Gn (n=1-6) for AlCARTFase were significantly enhanced with increasing glutamyl chain length [inhibition consts. (Ki): G1, 52 .mu.M; G6, 0.07 .mu.M]. Neither TNP-351 nor its polyglutamates were very strong inhibitors of GARTFase. These findings have significant implications regarding the mechanism of action of TNP-351.

IT **158836-73-8 158836-74-9 158836-75-0 158836-76-1 158836-77-2**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(cytotoxic effect of pyrrolo[2,3-d]pyrimidine antifolate TNP-351 and inhibition of transformylases of de novo purine biosynthesis)

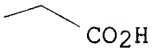
RN 158836-73-8 HCAPLUS
CN L-Glutamic acid, N-[N-[4-[3-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]benzoyl]-L-.gamma.-glutamyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



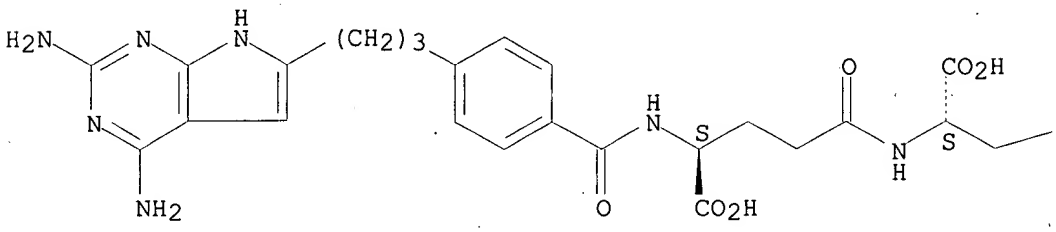
PAGE 1-B



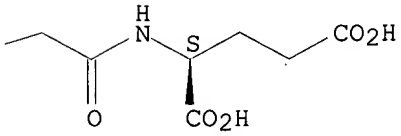
RN 158836-74-9 HCAPLUS
CN L-Glutamic acid, N-[N-[N-[4-[3-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]benzoyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



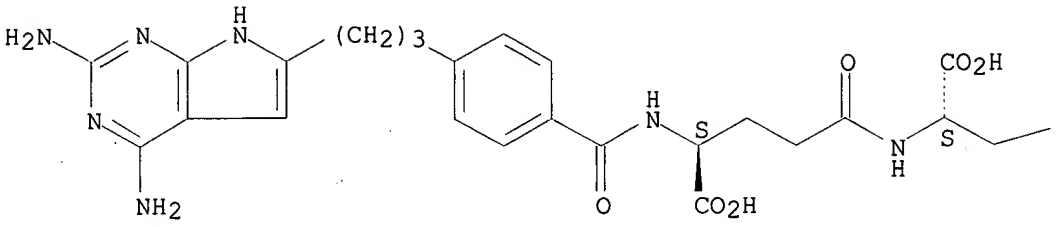
PAGE 1-B



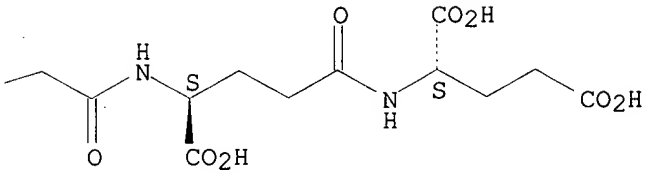
RN 158836-75-0 HCAPLUS
CN L-Glutamic acid, N-[N-[N-[N-[4-[3-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]benzoyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



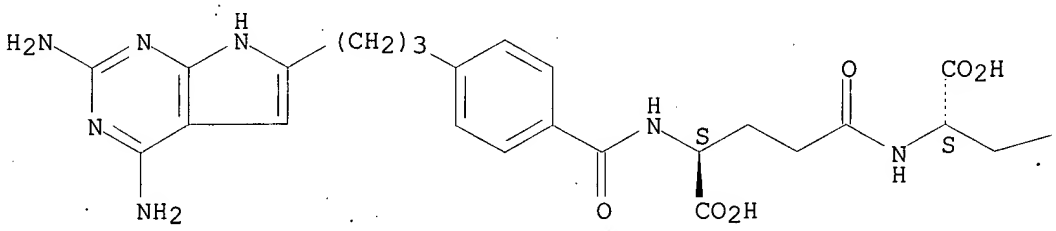
PAGE 1-B



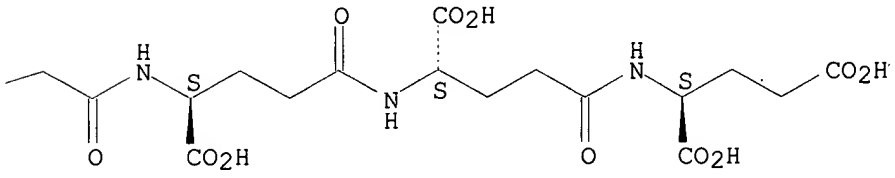
RN 158836-76-1 HCAPLUS
CN L-Glutamic acid, N-[N-[N-[N-[4-[3-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]benzoyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



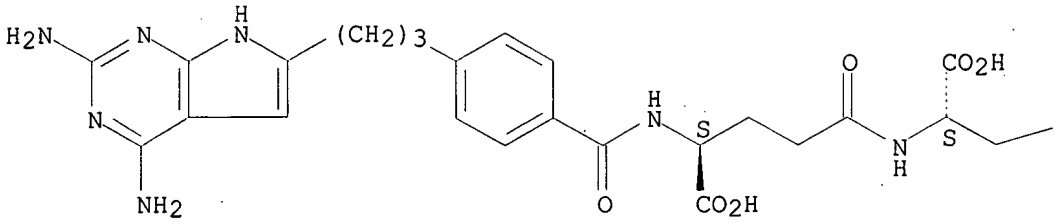
PAGE 1-B



RN 158836-77-2 HCAPLUS
CN L-Glutamic acid, N-[N-[N-[N-[N-[4-[3-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]benzoyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]-L-.gamma.-glutamyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-A



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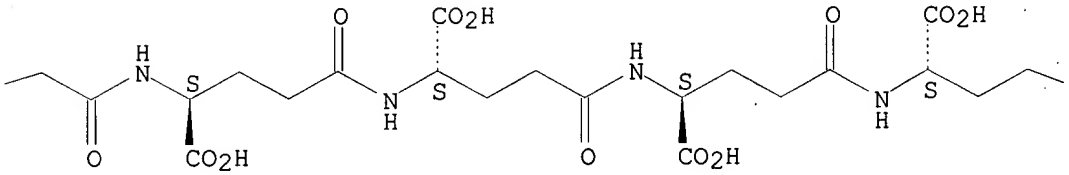

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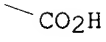
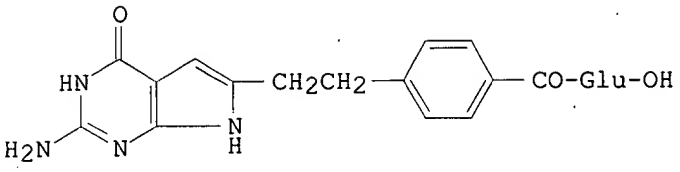


L6 ANSWER 18 OF 29 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER:	1994:31171 HCAPLUS
DOCUMENT NUMBER:	120:31171
TITLE:	Syntheses of a regioisomer of N-(4-[2-(2-amino-4(3H)-oxo-7H-pyrrolo[2,3-d]pyrimidin-5-yl)ethyl]benzoyl(-L-glutamic acid (LY231514), and active thymidylate synthase inhibitor and antitumor agent
AUTHOR(S):	Taylor, Edward C.; Young, Wendy B.; Chaudhari, Rajendra; Patel, Hemantkumar H.
CORPORATE SOURCE:	Dep. Chem., Princeton Univ., Princeton, NJ, 08544, USA
SOURCE:	Heterocycles (1993), 36(8), 1897-908 CODEN: HTCYAM; ISSN: 0385-5414
DOCUMENT TYPE:	Journal
LANGUAGE:	English
OTHER SOURCE(S):	CASREACT 120:31171

GI



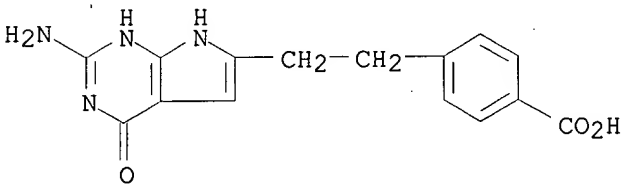
I

AB Two independent routes to [(pyrrolo[2,3-d]pyrimidine-6-yl)ethyl]benzoyl]-L-glutamic acid I, a regioisomer of the potent thymidylate synthase (TS) inhibitor and antitumor agent LY231514, are described. Preliminary in vitro cell culture evaluation has shown that attachment of the ethanobenzoylglutamate moiety of LY231514 to position 6 of the pyrrolopyrimidine ring system rather than to position 5 results in complete loss of biol. activity.

IT **151937-10-9P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and amidation of, with glutamate diester)

RN 151937-10-9 HCAPLUS

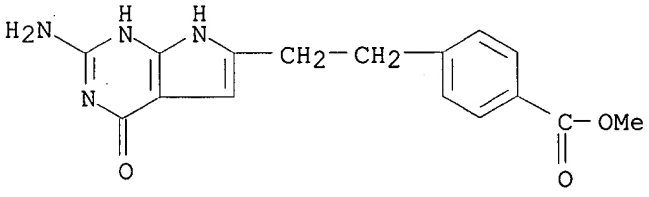
CN Benzoic acid, 4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]- (9CI) (CA INDEX NAME)



IT **136784-88-8P 151937-11-0P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and sapon. of)

RN 136784-88-8 HCAPLUS

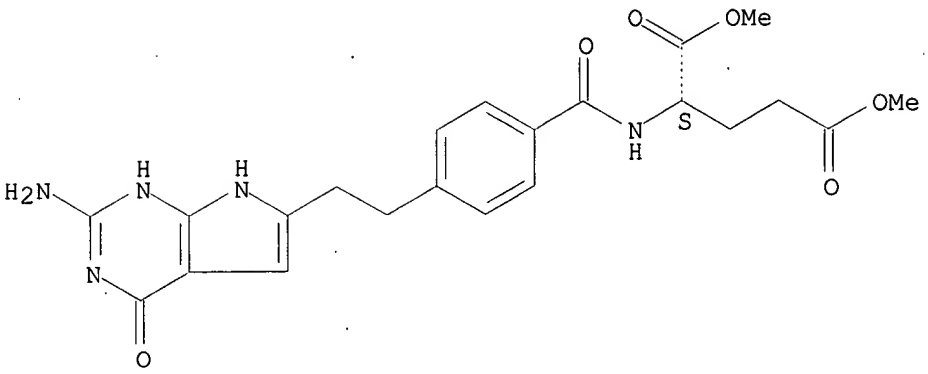
CN Benzoic acid, 4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]-, methyl ester (9CI) (CA INDEX NAME)



RN 151937-11-0 HCAPLUS

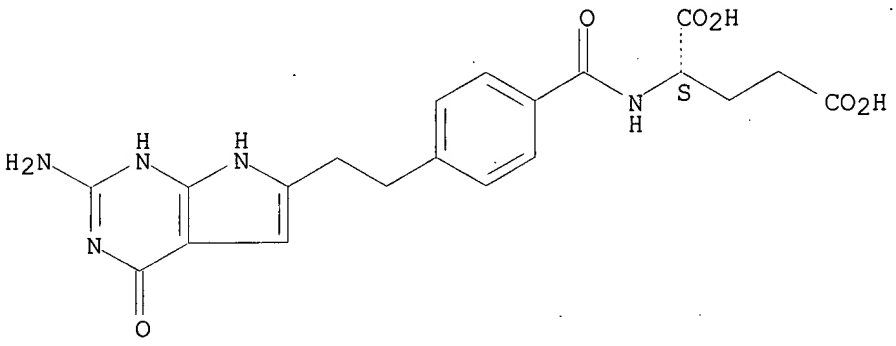
CN L-Glutamic acid, N-[4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]benzoyl]-, dimethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT **136784-43-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and thymidylate synthase inhibitory and antitumor activities of)
RN 136784-43-5 HCAPLUS
CN L-Glutamic acid, N-[4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

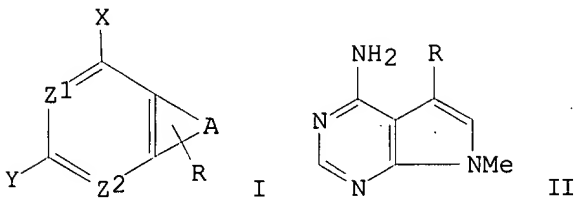


L6 ANSWER 19 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1991:608603 HCAPLUS
DOCUMENT NUMBER: 115:208603
TITLE: Preparation of N-[[(pyrrolopyrimidinyl)alkyl]benzoyl]glutamates and analogs as antitumor agents
INVENTOR(S): Akimoto, Hiroshi; Ootsu, Koichiro
PATENT ASSIGNEE(S): Takeda Chemical Industries, Ltd., Japan
SOURCE: Eur. Pat. Appl., 34 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 438261	A2	19910724	EP 1991-300266	19910115
EP 438261	A3	19920226		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE

CA 2034292 AA 19910717 CA 1991-2034292 19910116
JP 05078362 A2 19930330 JP 1991-196173 19910116
PRIORITY APPLN. INFO.: JP 1990-7962 19900116
OTHER SOURCE(S): MARPAT 115:208603
GI

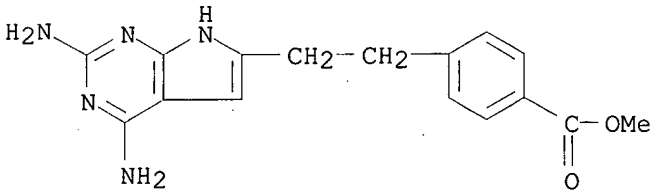


I II

AB Title compds. [I; A = atoms to complete a 5-membered ring; R = ZBCONHCH(CO2R1)CH2CH2CO2R2; B = (un)substituted divalent cyclic or chain group (sic); R1, R2 = ester residue, cation; X = NH2, OH, SH; Y = H halo, (un)substituted OH, NH2, SH, hydrocarbyl; Z = (heteroatom-interrupted) (un)substituted (CH2)2-5; 1 of Z1, Z2 = N and the other = N or CH] were prepd. as antitumor agents (no data). Thus, pyrrolopyrimidine II (R = cyano) was heated 1.5 h at 75-80.degree. with Raney Ni in HCO2H and the product (II; R = CHO) was condensed with Ph3P+CH2C6H4(CO2Me)-4 Br- to give, after hydrogenation, II [R = CH2CH2C6H4(CO2Me)-4] which was sapond. and the product condensed with di-Et glutamate to give II [R = CH2CH2C6H4CONHCH(CO2Et)CH2CH2CO2Et].

IT **136813-79-1P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction of, in prepn. of antitumor agents)

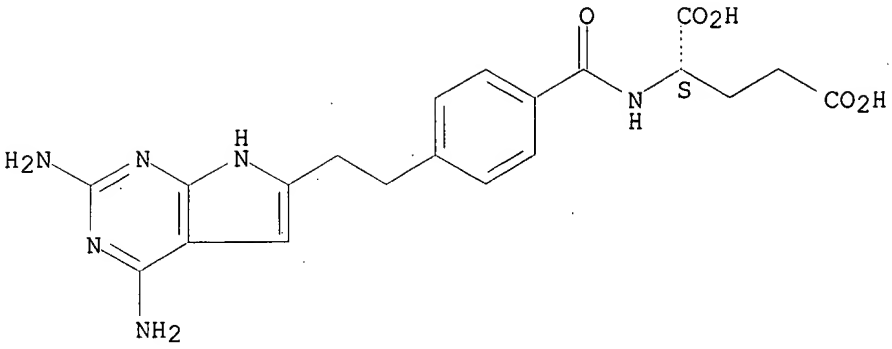
RN 136813-79-1 HCAPLUS
CN Benzoic acid, 4-[2-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]-, methyl ester (9CI) (CA INDEX NAME)



IT **136784-37-7P 136784-43-5P 136784-46-8P**
136784-47-9P 136784-50-4P 136784-51-5P
136784-52-6P 136784-53-7P 136784-56-0P
136784-58-2P 138262-38-1P
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(prepn. of, as antitumor agent)

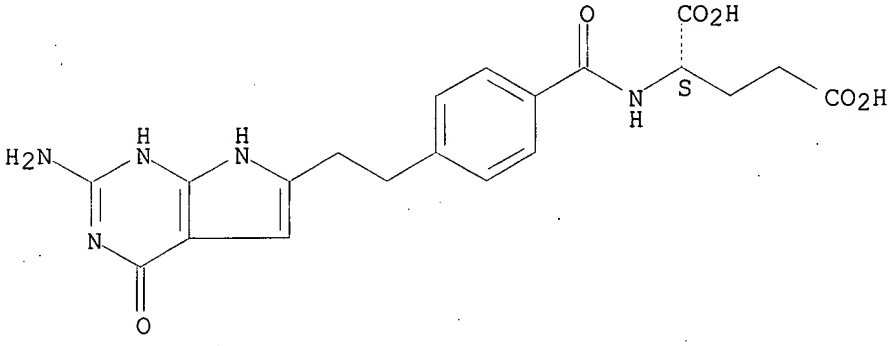
RN 136784-37-7 HCAPLUS
CN L-Glutamic acid, N-[4-[2-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



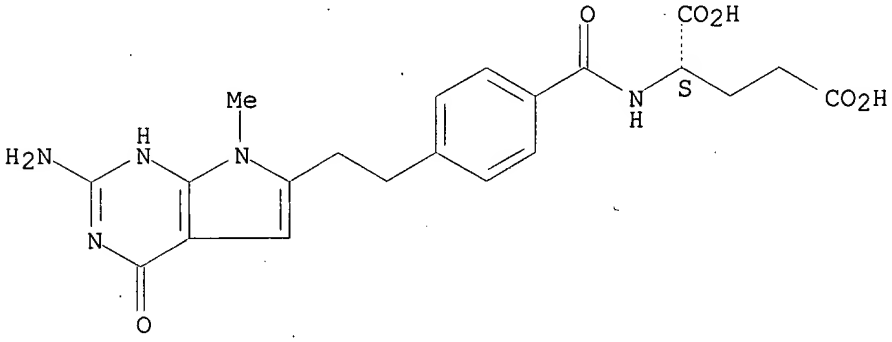
RN 136784-43-5 HCAPLUS
CN L-Glutamic acid, N-[4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



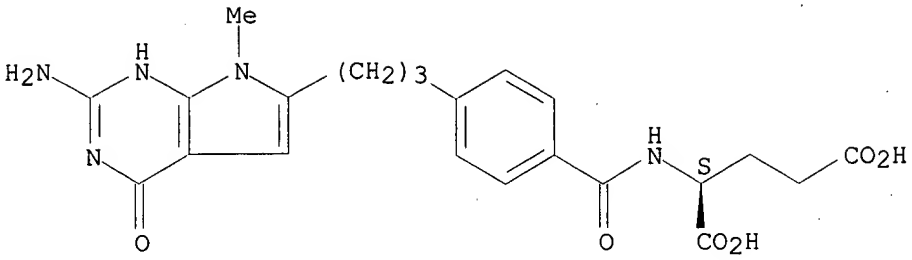
RN 136784-46-8 HCAPLUS
CN L-Glutamic acid, N-[4-[2-(2-amino-4,7-dihydro-7-methyl-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 136784-47-9 HCAPLUS
CN L-Glutamic acid, N-[4-[3-(2-amino-4,7-dihydro-7-methyl-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



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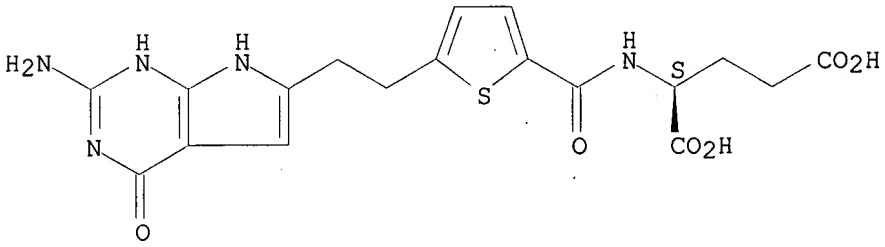
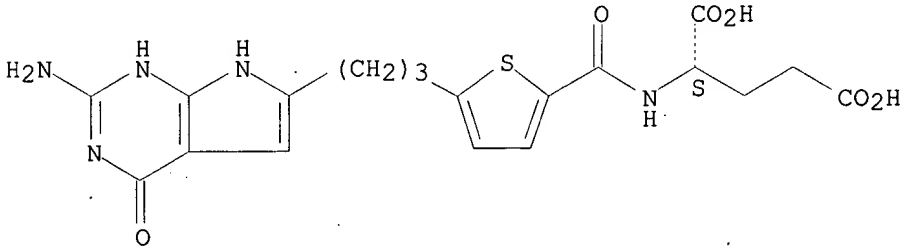
CN L-Glutamic acid, N-[[5-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]-2-thienyl]carbonyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



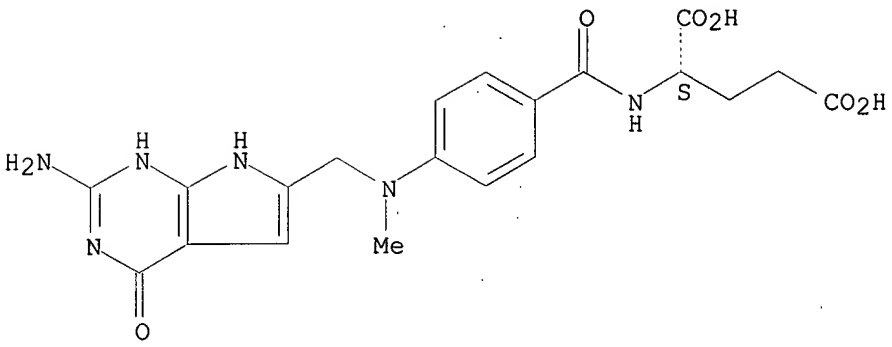
RN 136784-51-5 HCAPLUS
CN L-Glutamic acid, N-[[5-[3-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]-2-thienyl]carbonyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



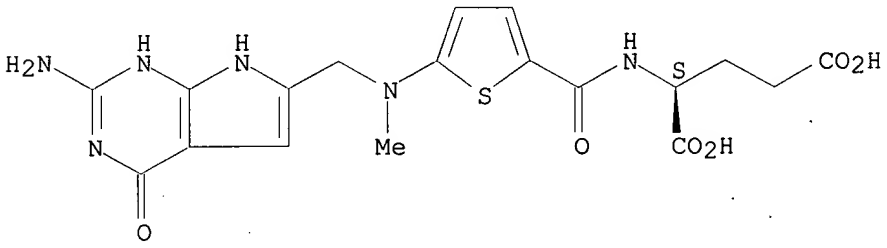
RN 136784-52-6 HCAPLUS
CN L-Glutamic acid, N-[4-[[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]methylamino]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



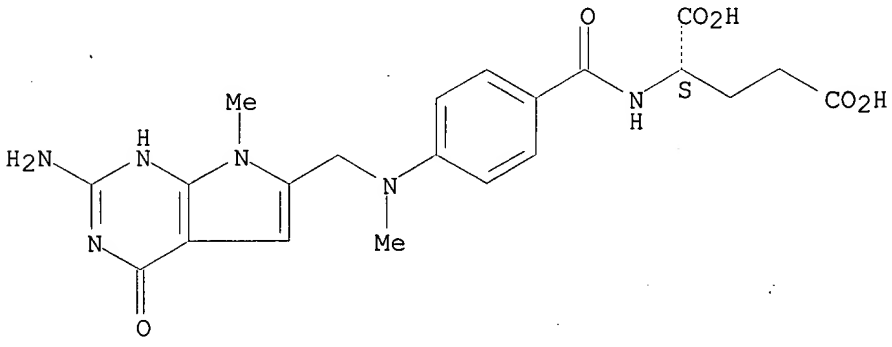
RN 136784-53-7 HCAPLUS
CN L-Glutamic acid, N-[[5-[[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]methylamino]-2-thienyl]carbonyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



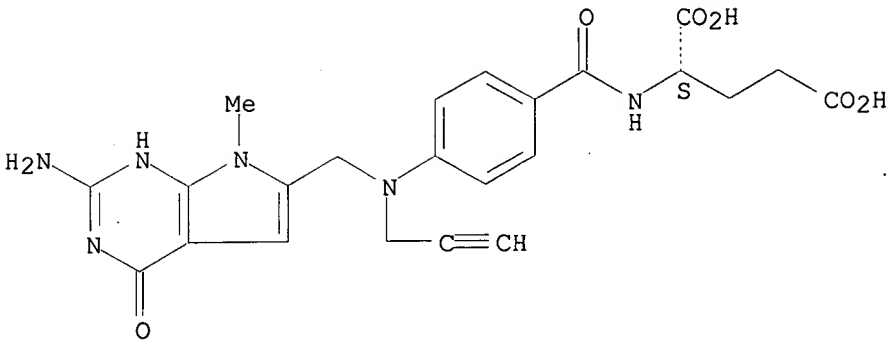
RN 136784-56-0 HCAPLUS
CN L-Glutamic acid, N-[4-[[(2-amino-4,7-dihydro-7-methyl-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]methylamino]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



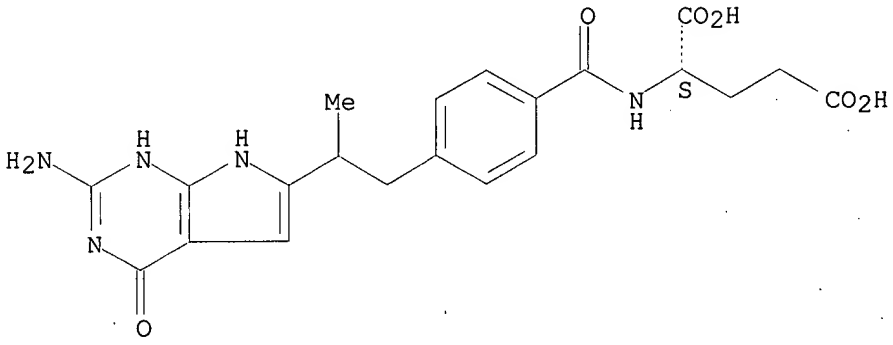
RN 136784-58-2 HCAPLUS
CN L-Glutamic acid, N-[4-[[(2-amino-4,7-dihydro-7-methyl-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]-2-propynylamino]benzoyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

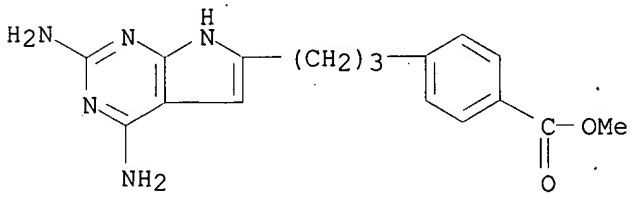


RN 138262-38-1 HCAPLUS
CN L-Glutamic acid, N-[4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]benzoyl]- (9CI) (CA INDEX NAME)

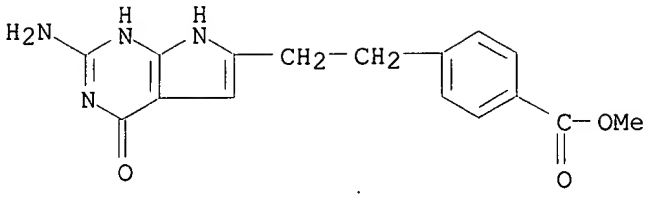
Absolute stereochemistry.



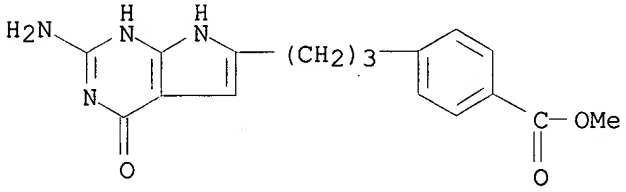
IT **136784-82-2 136784-88-8 136784-89-9**
136784-90-2 136784-96-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, in prepn. of antitumor agents)
RN 136784-82-2 HCAPLUS
CN Benzoic acid, 4-[3-(2,4-diamino-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]-, methyl ester (9CI) (CA INDEX NAME)



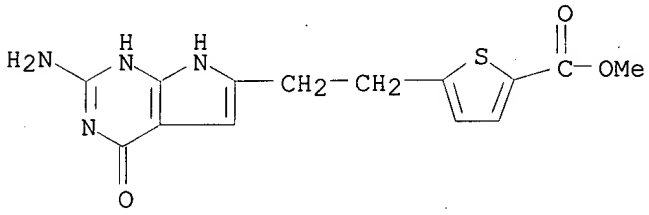
RN 136784-88-8 HCAPLUS
CN Benzoic acid, 4-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]-, methyl ester (9CI) (CA INDEX NAME)



RN 136784-89-9 HCAPLUS
CN Benzoic acid, 4-[3-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)propyl]-, methyl ester (9CI) (CA INDEX NAME)



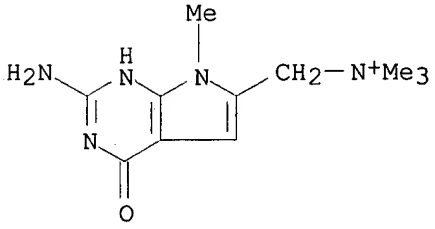
RN 136784-90-2 HCAPLUS
CN 2-Thiophenecarboxylic acid, 5-[2-(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)ethyl]-, methyl ester (9CI) (CA INDEX NAME)



RN 136784-96-8 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-methanaminium, 2-amino-4,7-dihydro-N,N,N,7-trimethyl-4-oxo-, methanesulfonate (9CI) (CA INDEX NAME)

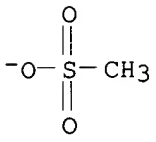
CM 1

CRN 136784-95-7
CMF C11 H18 N5 O

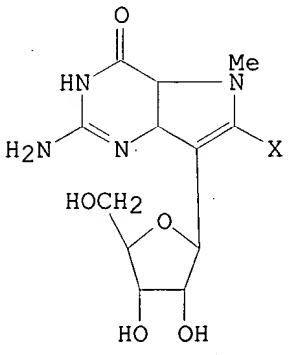


CM 2

CRN 16053-58-0
CMF C H3 O3 S



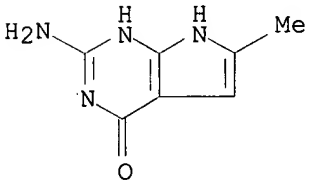
L6 ANSWER 20 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1990:604453 HCAPLUS
DOCUMENT NUMBER: 113:204453
TITLE: Direct C-glycosylation of guanine analogs: the synthesis and antiviral activity of certain 7- and 9-deazaguanine C-nucleosides
AUTHOR(S): Girgis, Nabih S.; Michael, Maged A.; Smee, Donald F.; Alaghamandan, Hassan A.; Robins, Roland K.; Cottam, Howard B.
CORPORATE SOURCE: ICN Nucleic Acid Res. Inst., Costa Mesa, CA, 92626, USA
SOURCE: Journal of Medicinal Chemistry (1990), 33(10), 2750-5
CODEN: JMCMAR; ISSN: 0022-2623
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 113:204453
GI



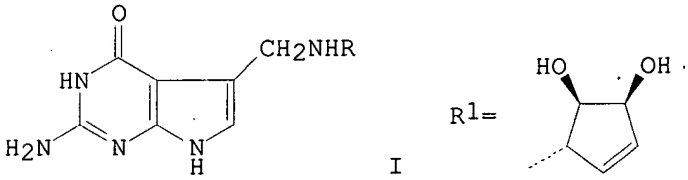
I, X=Cl
II, X=Br

AB C-glycosylation of two guanine analogs, 9-deaza- and 7-deazaguanine, was achieved under Friedel-Crafts conditions, providing a direct synthetic route to 9-deazaguanosine, and 8-.beta.-D-ribofuranosyl-7-deazaguanine, resp. This electrophilic C-glycosylation was applied successfully to 6 guanine and substituted-guanine analogs resulting in yields of approx. 50%. This represents the first reported C-ribosylation of preformed nitrogen heterocycles isosteric with guanine. These C-nucleosides were evaluated for their ability to provide protection against a lethal Semliki Forest virus infection in mice, relative to 7-thia-8-oxyguanosine which was used as a pos. control. Two of the C-nucleosides (I and II) showed good prophylactic activity in this virus model system.
IT **62981-82-2**

RL: RCT (Reactant); RACT (Reactant or reagent)
(C-glycosylation of, ribofuranose deriv.)
RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



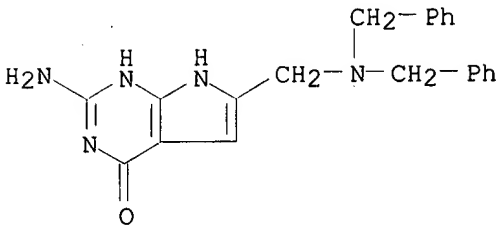
L6 ANSWER 21 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1989:75135 HCAPLUS
DOCUMENT NUMBER: 110:75135
TITLE: Synthesis of queuine, the base of naturally occurring hypermodified nucleoside (queuosine), and its analogs
AUTHOR(S): Akimoto, Hiroshi; Imamiya, Eiko; Hitaka, Takenori; Nomura, Hiroaki; Nishimura, Susumu
CORPORATE SOURCE: Cent. Res. Div., Takeda Chem. Ind., Ltd., Osaka, 532, Japan
SOURCE: Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1972-1999) (1988), (7), 1637-44
CODEN: JCPRB4; ISSN: 0300-922X
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 110:75135
GI



I

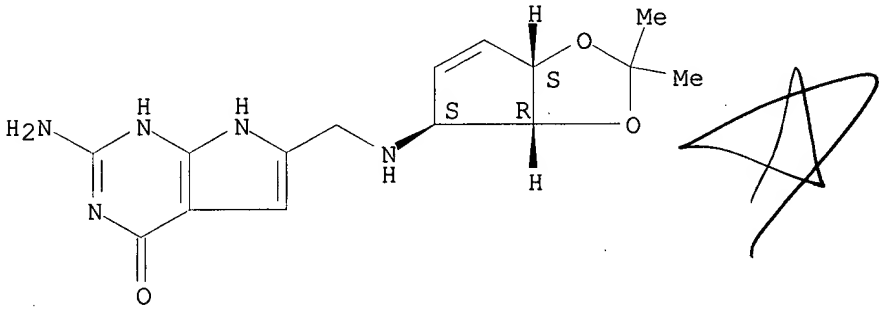
AB Queuine (I; R = R1) and its biosynthetic precursor, I (R = H) were prepd. Mannich reaction of 2-acylaminopyrrolo[2,3-d]pyrimidin-4(3H)-ones was followed by amine exchange reaction of the 5-dibenzylamino function with (1S,2R,3S)-2,3-isopropylidenedioxycyclopent-4-enylamine, which yielded I (R = R1). Similar exchange reaction with NH3 gave I (R = H). A series of queuine analogs with structural variations in their 5-aminomethyl side-chains were synthesized by the amine exchange reaction or by acylation of I (R = H).
IT **118527-60-9P 118527-61-0P 118527-73-4P 118626-47-4P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)
RN 118527-60-9 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[[bis(phenylmethyl)amino]methy

l]-1,7-dihydro- (9CI) (CA INDEX NAME)



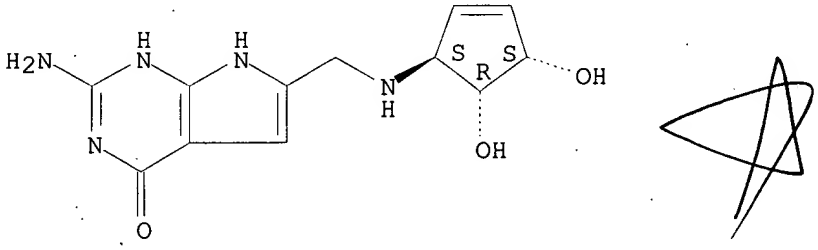
RN 118527-61-0 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[[(3a,6a-dihydro-2,2-dimethyl-4H-cyclopenta-1,3-dioxol-4-yl)amino]methyl]-1,7-dihydro-, [3aR-(3a.alpha.,4.alpha.,6a.alpha.)]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



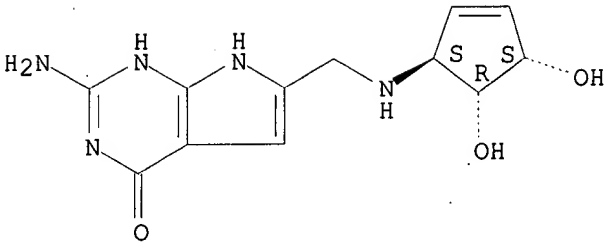
RN 118527-73-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[[(4,5-dihydroxy-2-cyclopenten-1-yl)amino]methyl]-1,7-dihydro-, [1S-(1.alpha.,4.beta.,5.beta.)]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



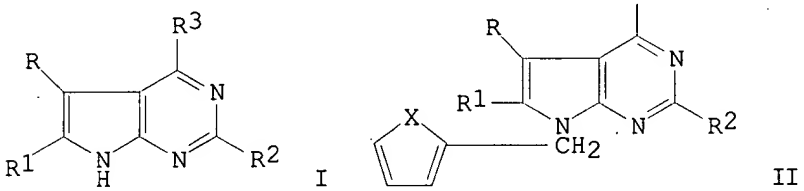
RN 118626-47-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[[(4,5-dihydroxy-2-cyclopenten-1-yl)amino]methyl]-1,7-dihydro-, dihydrochloride, [1S-(1.alpha.,4.beta.,5.beta.)]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

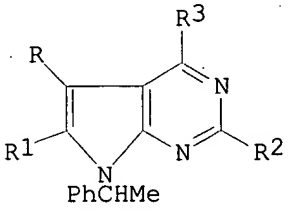


●2 HCl

L6 ANSWER 22 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1986:572397 HCAPLUS
DOCUMENT NUMBER: 105:172397
TITLE: Synthesis of 7-unsubstituted 7H-pyrrolo[2,3-d]pyrimidines
AUTHOR(S): Pichler, Herbert; Folkers, Gerd; Roth, Hermann J.; Eger, Kurt
CORPORATE SOURCE: Pharm. Inst., Univ. Bonn, Bonn, D-5300, Fed. Rep. Ger.
SOURCE: Liebigs Annalen der Chemie (1986), (9), 1485-505
CODEN: LACHDL; ISSN: 0170-2041
DOCUMENT TYPE: Journal
LANGUAGE: German
OTHER SOURCE(S): CASREACT 105:172397
GI



I II

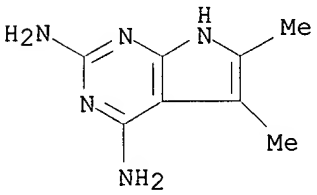


III

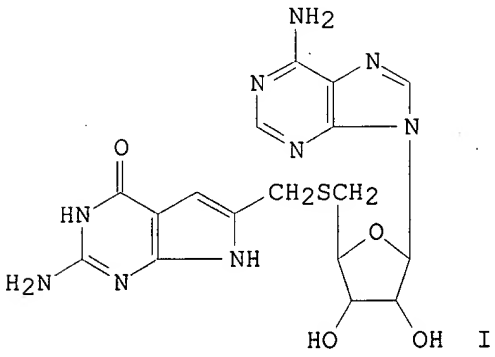
AB Pyrrolopyridines I [R,R1 = Me, Ph; R2 = H, NH2; R3 = OH, NH2, Cl, NHAc, NAc2, NHCOEt, N(COEt)2] were obtained by N-7 dealkylation of the 2-furanylmethyl, 2-thienylmethyl, or 1-phenylethyl group from furans II (X = O, S) and styrenes III with polyphosphoric acid. In contrast to the 2-furanylmethyl group the 2-thienylmethyl and 1-phenylethyl groups were removed independently of the substitution of II and III.

IT **103026-42-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of)
RN 103026-42-2 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-2,4-diamine, 5,6-dimethyl- (9CI) (CA INDEX NAME)



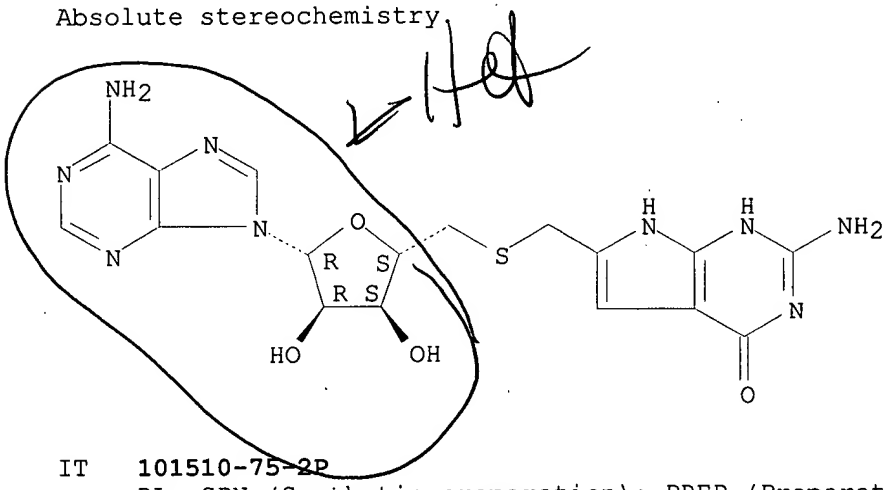
L6 ANSWER 23 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1986:164169 HCAPLUS
DOCUMENT NUMBER: 104:164169
TITLE: Inhibition of vaccinia RNA guanine 7-methyltransferase by compounds designed as multisubstrate adducts
AUTHOR(S): Benghiat, Eric; Crooks, Peter A.; Goodwin, Raymond; Rottman, Fritz
CORPORATE SOURCE: Coll. Pharm., Univ. Kentucky, Lexington, KY, 40536, USA
SOURCE: Journal of Pharmaceutical Sciences (1986), 75(2), 142-5
CODEN: JPMSAE; ISSN: 0022-3549
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



AB Several potential inhibitors of mRNA guanine 7-methyltransferase, which were designed from mechanism-based considerations, were evaluated against the vaccinia virus capping enzyme complex. Of the compds. tested, 5'-deoxy-5'[6-(2-aminopyrrolo[2,3-d]-pyrimidine-4-one)methylthio]adenosine (I) had good selective inhibitory activity against vaccinia mRNA guanine 7-methyltransferase, exhibiting a concn. for 50% inhibition of 9.2 .times. 10-5M. Structure-activity considerations suggest that specific inhibition of RNA methyltransferases by low-mol.-wt. multisubstrate adduct inhibitors may be achievable.

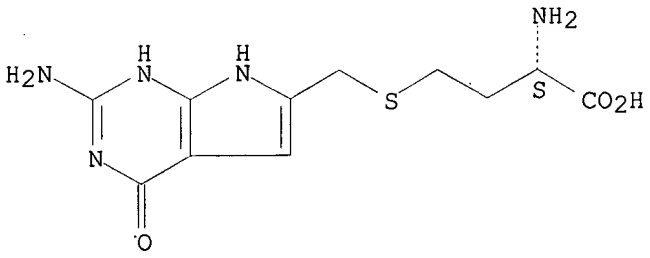
IT **87358-33-6**
RL: BIOL (Biological study)
(RNA guanine methyltransferase of vaccinia virus inhibition by)
RN 87358-33-6 HCAPLUS
CN Adenosine, 5'-S-[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]-5'-thio- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT **101510-75-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and RNA guanine methyltransferase of vaccinia virus inhibition by)
RN 101510-75-2 HCAPLUS
CN L-Homocysteine, S-[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



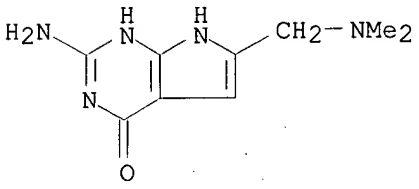
L6 ANSWER 24 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1984:170571 HCAPLUS
DOCUMENT NUMBER: 100:170571
TITLE: Substrate and inhibitor specificity of tRNA-guanine ribosyltransferase
AUTHOR(S): Farkas, Walter R.; Jacobson, K. Bruce; Katze, Jon R.
CORPORATE SOURCE: Cent. Health Sci., Univ. Tennessee, Knoxville, TN, 37920, USA
SOURCE: Biochimica et Biophysica Acta (1984), 781(1-2), 64-75
CODEN: BBACAQ; ISSN: 0006-3002
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A no. of compds., including derivs. of 7-deazaguanine, pteridines, purines, pyrimidines, and antimalarials were tested as inhibitors or substrates of tRNA-guanine ribosyltransferase (EC 2.4.2.29) (I).

Virtually all purines and pteridines that were inhibitors or substrates of rabbit reticulocyte I had an amino N atom at the 2-position. In addn., the 9-position and the O atom at the 6-position may be important for recognition by the enzyme. Satn. of the double bond in the cyclopentenediol moiety of queuine (II) reduced the substrate activity and II analogs that lacked the cyclopentenediol moiety, such as 7-deazaguanine and 7-aminomethyl-7-deazaguanine, were relatively poor substrates for I. Adenosine was not an inhibitor of I and neoplanocin A (an adenosine analog in which a cyclopentenediol replaced the ribose moiety) was a poor inhibitor. The incorporation of 7-aminomethyl-7-deazaguanine into the tRNA of L-M cells resulted in a novel chromatog. form of tRNAAsp, indicating that L-M cells cannot modify this queuosone precursor (in Escherichia coli) to queuosine. The specific incorporation of 7-deazaguanine and 8-azaguanine into tRNA by L-M cells also resulted in novel chromatog. forms of tRNAAsp. With intact L-M cells, I-catalyzed insertion into tRNA of II, dihydro-II, 7-aminomethyl-7-deazaguanine, or 7-deazaguanine was irreversible, whereas guanine or 8-azaguanine incorporation was reversible, suggesting that it is the substitution of C-7 for N-7 which prevents the reversible incorporation of II into tRNA.

IT **62981-83-3**
RL: BIOL (Biological study)
(tRNA-guanine ribosyltransferase inhibition by, structure in relation to)

RN 62981-83-3 HCAPLUS

CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[(dimethylamino)methyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



L6 ANSWER 25 OF 29 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1983:558765 HCAPLUS

DOCUMENT NUMBER: 99:158765

TITLE: Synthesis of S-5-pyrrolo[2,3-b]pyridinemethyl and S-5- and S-6-pyrrolo[2,3-d]pyrimidinemethyl derivatives of 5'-deoxy-5'-thioadenosine

AUTHOR(S): Benghiat, Eric; Crooks, Peter A.

CORPORATE SOURCE: Coll. Pharm., Univ. Kentucky, Lexington, KY, 40536-0053, USA

SOURCE: Journal of Heterocyclic Chemistry (1983), 20(3), 677-9
CODEN: JHTCAD; ISSN: 0022-152X

DOCUMENT TYPE: Journal

LANGUAGE: English

GI

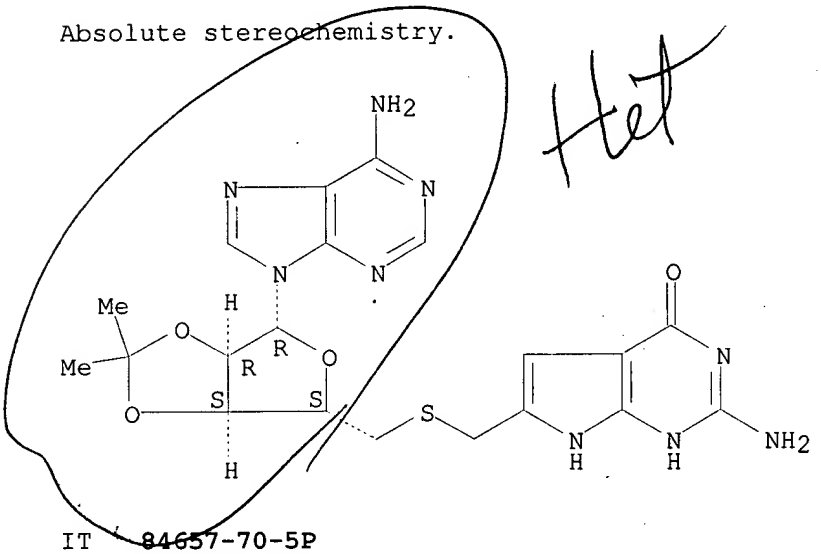
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Reaction of pyrrolopyridine I with adenosine II in ethanolic NaOH soln., followed by deprotection of the resulting thioether in 80% HCO2H, afforded

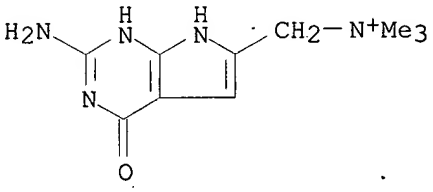
(pyrrolopyridinemethylthio)adenosine III. Adenosines IV and V were analogously prepd.

IT **87358-34-7P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and deisopropylidenation of)
RN 87358-34-7 HCAPLUS
CN Adenosine, 5'-S-[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]-2',3'-O-(1-methylethylidene)-5'-thio- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

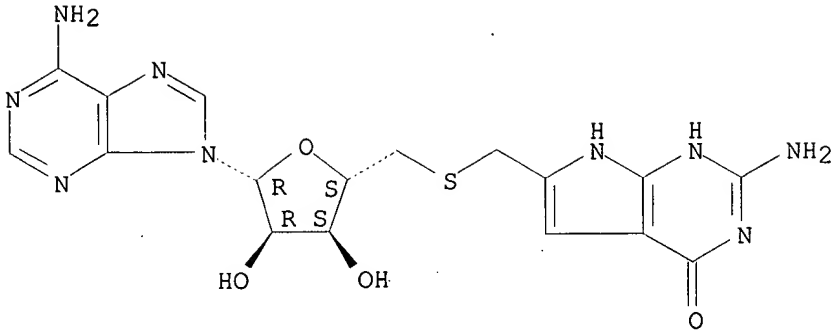


IT **84657-70-5P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction of, with deoxy(thioacetyl)formylisopropylideneadenosine)
RN 84657-70-5 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-methanaminium, 2-amino-4,7-dihydro-N,N,N-trimethyl-4-oxo-, iodide (9CI) (CA INDEX NAME)

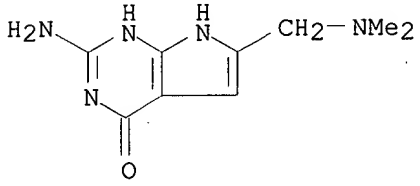


IT **87358-33-6P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)
RN 87358-33-6 HCAPLUS
CN Adenosine, 5'-S-[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl]-5'-thio- (9CI) (CA INDEX NAME)

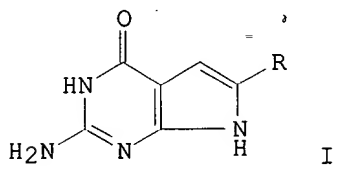
Absolute stereochemistry.



IT **62981-83-3**
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with Me iodide)
RN 62981-83-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[(dimethylamino)methyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



L6 ANSWER 26 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1983:89290 HCAPLUS
DOCUMENT NUMBER: 98:89290
TITLE: Synthesis of 7-deazaguanine (2-amino-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one) analogs substituted at C-8
AUTHOR(S): Banghiat, Eric; Crooks, Peter A.
CORPORATE SOURCE: Coll. Pharm., Univ. Kentucky, Lexington, KY, 40536, USA
SOURCE: Chemistry & Industry (London, United Kingdom) (1982), (17), 661-2
CODEN: CHINAG; ISSN: 0009-3068
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 98:89290
GI



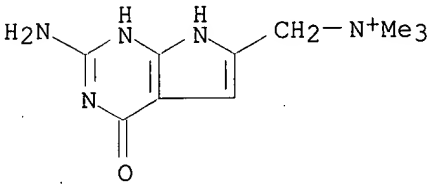
I

AB The title compds. were prepd. by replacement of the Me2N group of Mannich base (I; R = CH2NMe2) (II). Treatment of II with MeI in DMSO for 1 h at room temp. gave 89% I (R = CH2N+Me3 I-) (III) which underwent a variety of nucleophilic substitution reactions. E.g., treatment of III with PhCH2NH2 under N for 1 h at 100.degree. gave I (R = CH2NHCH2Ph) in 75% yield.

IT **84657-70-5P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and nucleophilic substitution reactions of)

RN 84657-70-5 HCAPLUS

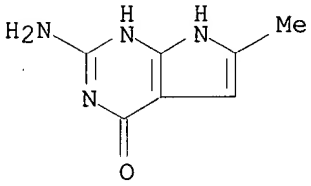
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-methanaminium, 2-amino-4,7-dihydro-N,N,N-trimethyl-4-oxo-, iodide (9CI) (CA INDEX NAME)



IT **62981-82-2P 84657-71-6P 84657-72-7P 84780-48-3P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

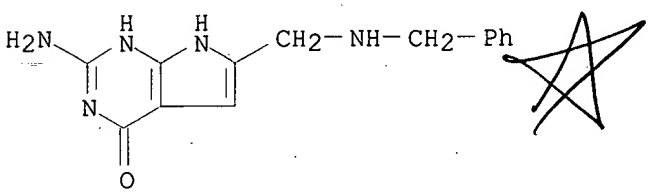
RN 62981-82-2 HCAPLUS

CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



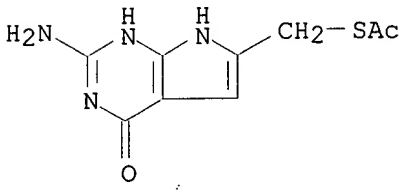
RN 84657-71-6 HCAPLUS

CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-[[(phenylmethyl)amino]methyl]- (9CI) (CA INDEX NAME)

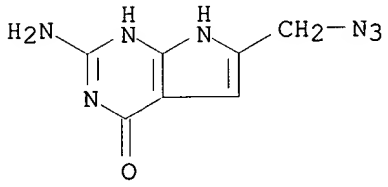


RN 84657-72-7 HCAPLUS

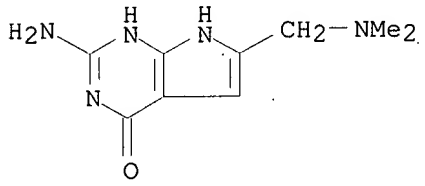
CN Ethanethioic acid, S-[(2-amino-4,7-dihydro-4-oxo-1H-pyrrolo[2,3-d]pyrimidin-6-yl)methyl] ester (9CI) (CA INDEX NAME)



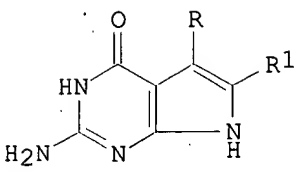
RN 84780-48-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-(azidomethyl)-1,7-dihydro- (9CI) (CA INDEX NAME)



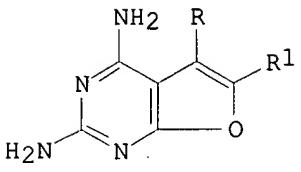
IT **62981-83-3**
RL: RCT (Reactant); RACT (Reactant or reagent)
(quaternization of, by Me iodide)
RN 62981-83-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[(dimethylamino)methyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



L6 ANSWER 27 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1978:580272 HCAPLUS
DOCUMENT NUMBER: 89:180272
TITLE: Studies directed toward a total synthesis of nucleoside Q. Annulation of 2,6-diaminopyrimidin-4-one with .alpha.-halo carbonyls to form pyrrolo[2,3-d]pyrimidines and furo[2,3-d]pyrimidines
AUTHOR(S): Secrist, John A., III; Liu, Paul S.
CORPORATE SOURCE: Dep. Chem., Ohio State Univ., Columbus, OH, USA
SOURCE: Journal of Organic Chemistry (1978), 43(20), 3937-41
CODEN: JOCEAH; ISSN: 0022-3263
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



II

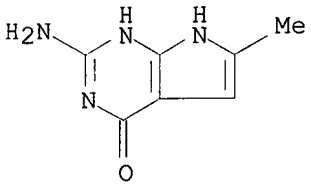


III

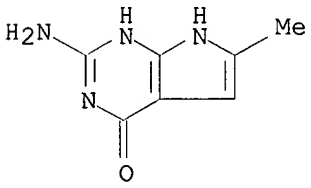
AB The condensation of 2,6-diaminopyrimidin-4-one (I) with RCHXCOR1 [R = H, Me, Ph, PhCH2; R1 = Me, EtO2CCH2, Ph, ClCH2; RR1 = (CH2)4; X = Cl, Br] to give pyrrolo[2,3-d]pyrimidin-4-ones II and furo[2,3-d]pyrimidines III was studied. The reaction was regiospecific. For example, the reaction of I and ClCH2COMe gave II (R = H, R1 = Me) and III (R = Me, R1 = H), whereas I and MeCHClCHO gave II (R = Me, R1 = H) (IV), exclusively. The IV is contained in nucleoside Q.

IT **62981-82-2P 67194-80-3P 67194-81-4P 67226-39-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)

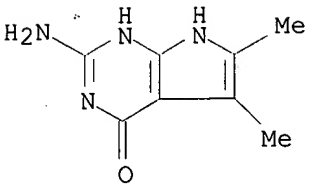


RN 67194-80-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl-, monohydrochloride (9CI) (CA INDEX NAME)

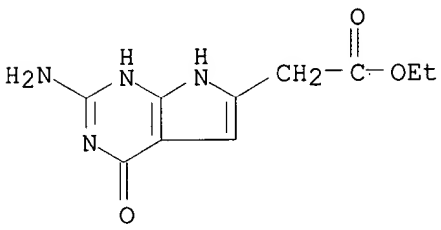


● HCl

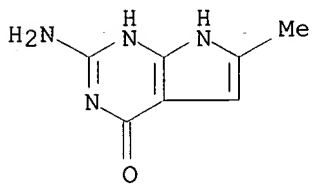
RN 67194-81-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-5,6-dimethyl- (9CI) (CA INDEX NAME)



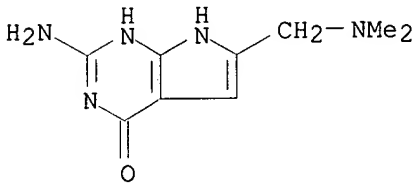
RN 67226-39-5 HCAPLUS
CN 1H-Pyrrolo[2,3-d]pyrimidine-6-acetic acid, 2-amino-4,7-dihydro-4-oxo-, ethyl ester (9CI) (CA INDEX NAME)



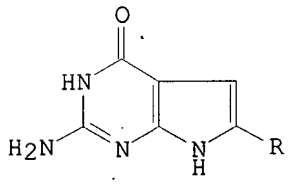
L6 ANSWER 28 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1978:5708 HCAPLUS
DOCUMENT NUMBER: 88:5708
TITLE: Simple determination of the position of substitution in the pyrrol ring of pyrrolo[2,3-d]pyrimidines and 7-deazanucleosides using carbon-13 NMR
AUTHOR(S): Luepke, Uwe; Seela, Frank
CORPORATE SOURCE: Fachber. 13, Univ. Paderborn, Paderborn, Fed. Rep. Ger.
SOURCE: Zeitschrift fuer Naturforschung, Teil B: Anorganische Chemie, Organische Chemie (1977), 32B(8), 958-9
CODEN: ZNBAD2; ISSN: 0340-5087
DOCUMENT TYPE: Journal
LANGUAGE: German
AB The position of substituents at C-5 or C-6 of pyrrolo[2,3-d]pyrimidines can be detd. by 13C NMR spectroscopy. The method can also be used for 7-deazanucleosides e.g., tubercidin (I), and allows the assignment of the position of side chains.
IT **62981-82-2 62981-83-3**
RL: PRP (Properties)
(NMR spectrum of, detn. of)
RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



RN 62981-83-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[(dimethylamino)methyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



L6 ANSWER 29 OF 29 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1977:423203 HCAPLUS
DOCUMENT NUMBER: 87:23203
TITLE: Mannich reaction at 2-amino-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the chromophore of the ribonucleoside "Q"
AUTHOR(S): Seela, Frank; Luepke, Uwe
CORPORATE SOURCE: Gesamthochsch., Univ. Paderborn, Paderborn, Fed. Rep. Ger.
SOURCE: Chemische Berichte (1977), 110(4), 1462-9
CODEN: CHBEAM; ISSN: 0009-2940
DOCUMENT TYPE: Journal
LANGUAGE: German
GI



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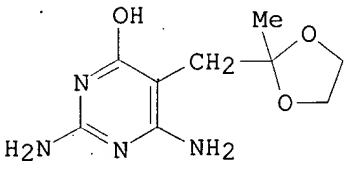
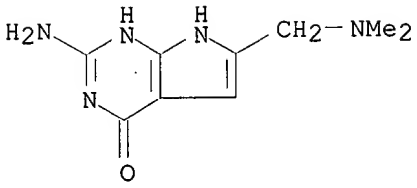
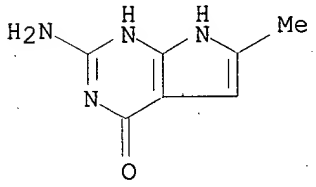


III

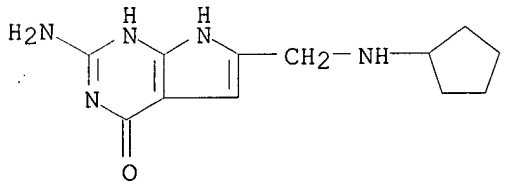
AB The Mannich reactions of aminopyrrolopyrimidinone I (R = H) with Me2NH and cyclopentylamine gave 90.9% I (R = Me2NH2) (II) and 65.8% I [R = (cyclopentylamino)methyl], resp. Hydrogenolysis of II over Raney Ni gave I (R = Me), which also was prepd. by successive deketalization and cyclization of pyrimidineacetaldehyde ketal III.
IT **62981-83-3P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and hydrogenolysis of)
RN 62981-83-3 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[(dimethylamino)methyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



IT **62981-82-2P 62981-84-4P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)
RN 62981-82-2 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-1,7-dihydro-6-methyl- (9CI) (CA INDEX NAME)



RN 62981-84-4 HCAPLUS
CN 4H-Pyrrolo[2,3-d]pyrimidin-4-one, 2-amino-6-[(cyclopentylamino)methyl]-1,7-dihydro- (9CI) (CA INDEX NAME)



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L5             94 S L3 FULL

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L6             29 S L5
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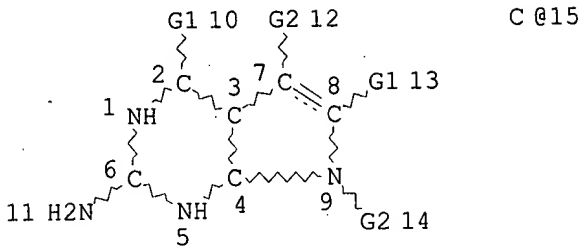
94 compds from Reg. - need que start

29 cits from CAPlus

=> d que stat 16
L3 STR



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DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

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RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
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L6 29 SEA FILE=HCAPLUS ABB=ON L5